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Reconfiguring Public Access in the Post-Convergence Era: The Social Construction of Public Access to New Media in Austin, TX

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Reconfiguring Public Access in the Post-Convergence Era: The Social Construction of Public Access to New Media in Austin, Texas

by

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Dissertation

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Doctor of Philosophy

The University of Texas at Austin

December, 2007

Dedication

To my mother, Marta Bautista,

a bundle of love, strength and compassion.

Acknowledgements

This project is the result of a long journey that started fifteen years ago in the classrooms of the Universidad Central de Venezuela where I first dreamed about sharpening skills to critically explore the intersections of communications and issues of social justice in our times. This project is the expression of the inspiration and support provided by professors and colleagues who have accompanied me in this journey, most of whom cannot be individually acknowledged in these pages.

My doctoral advisor, Professor Joseph Straubhaar, has not only been a stimulating teacher but also a role model of integrity, intellect and commitment to students and academic life. He encouraged me to pursue my academic interests with conviction, offering his advice, support and help whenever I needed it. He gave me many opportunities to work on research and debate ideas, so that I could develop confidence in my own ability to make a contribution to the field. He always found time to listen and work with me, and helped me to ponder career and life decisions, contributing to my growth as a scholar and a person.

I was also incredibly fortunate to work with Professor Sharon Strover, co-supervisor of this project. She has been one of the best teachers I have had in my life. Her insights and high standards moved me to look beyond accepted thinking in the field, to re-interrogate assumptions about public policy for the digital age. Professor Strover believed that I could look and go farther than I anticipated, and pushed me to realize the full potential of this project. I am indebted to her for teaching me much about myself.

I am also indebted in many ways to Professor John Downing, a profound thinker and a wonderful man who combines academic rigor with generosity of spirit. He introduced me to the thinking and concepts of social theory, challenging me to

incorporate them in my theoretical work as well in as my practice as an activist researcher.

Professor Laura Stein made this a much better dissertation, and me a much better researcher. With her impressive analytical mind, interest and the kindness she extended to both my work and to me, she brought clarity and professionalism to my thinking and writing.

Professor David Phillips provided inspiration and thought provoking ideas about the relationship between technology, policy and society. I was lucky to start my doctoral studies knowing him, and even luckier to have him on my dissertation committee.

This dissertation could not have been completed without the guidance and support of Professor Karin Wilkins. She provided the clarity I sought or just the question I needed to ask at crucial times. When I look back to our conversations and time together, it always amazes me how valuable these exchanges were for the development of this project.

Special thanks to Professor Jorge A. González Sánchez whose theoretical work and innovations laid the foundation for this dissertation. In addition, his insights and generous disposition to share life and intellectual interests made a significant impact in my trajectory as a teacher and engaged scholar.

During the development of this project, my friends have been a great source of intellectual and personal support. My special thanks go to Gisela Gil, my lifetime friend and colleague, a truly intellectual and spiritual sister in trying times. John Jirik, Dean Graber, and Karen Gustafson generously spent hours reading my work and exchanging ideas. Their insightful comments and encouragement were tremendously helpful. Particular thanks also go to Nobuya Inagaki, the best research partner and colleague one could dream of having. His amazing analytical skills are only comparable to his

generosity and human qualities. Finally, many thanks to Ana Sisnett, former Executive Director of Austin Free-Net, and to my colleagues at the Cultural Mapping project of Austin. Their kindness and optimism helped to sustain me through the ups and downs of the dissertation process.

Reconfiguring Public Access in the Post-Convergence Era: The Social Construction of Public Access to New Media in Austin, Texas

Publication No._____

Martha Fuentes-Bautista, Ph.D.

The University of Texas at Austin, 2007

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This dissertation examines the impacts of shifting federal and state regulation on localities and on their efforts to extend public access to new technologies by exploring how libraries, diverse community sites and commercial hotspots have configured their services and programs in Austin, Texas in the last decade. Historically, regulation to ensure public access to communication and information systems have been regarded in the United States as an expression of government's concerns about preserving the public interest in the media. Since the early 1990s, diverse policy initiatives promoting public access to information and communication technology (ICT) sought to fulfill ideals of equity and democracy in the information age. However, an increasing preponderance of neoliberal ideology in current policy discourses, coupled with the explosive growth of high-speed, mobile networks, and individual-based, social software applications are challenging traditional notions of public access in communication policy. Since 2002, federal and state governments have ended a decade of direct government support to local,

non-profit and community-based programs that facilitated public access to ICT. Over the same period, they have increasingly pursued a market-oriented approach to broadband access through the unlicensed spectrum, encouraging private enterprises to provider Wi-Fi and wireless services to consumers in restaurants, airports, and other public places. Such changes bear significant implications for issues of governance, participatory democracy and equity in the information age.

The comparative case study of Internet access initiatives in Austin seeks to answer three interrelated questions. First, how has public policy facilitating the transition toward convergent media environments framed public access to information and communication technologies (ICT)? A framing analysis of federal, state and local regulation of public ICT access indicates increasing fragmentation of policy discourses on access. Second, what are the main characteristics of the field of public access to ICT in an American technopolis? Austin, a modern American Technopolis and pioneer of Internet access in the country serves as a site to assess the impact of fragmented regulation on public ICT access. Third, how has public access to new technology through the unlicensed spectrum been conceptualized by different access cultures in a shifting regulatory environment? A survey of Wi-Fi hotspots in Austin, interviews with stakeholders and secondary data are employed in analyzing how non-profits, private firms and the local government are configuring high-speed Internet access through the unlicensed spectrum.

Table of Contents

List of Tables

List of Figures

List of Illustrations

Chapter One: Introduction

Historically, initiatives to ensure public access to communication and information systems have been regarded in the United States as an expression of regulators' concerns about preserving the public interest in the media. Public access policies have been applied as mechanisms for asserting people's right to speak and engage in democratic debate on cable access channels, granting the right to access public information at public libraries, and securing universal and fair access to advanced telecommunication services. Since the early 1990s, diverse policy initiatives promoting public access to information and communication technology (ICT) sought to fulfill similar ideals of equity and democracy in the information age. However, an increasing preponderance of neoliberal ideology in current policy discourses, coupled with the explosive growth of high-speed, mobile networks, and the advent of social software and collaborative online applications such as wikis, videoblogs, and instant messaging, are challenging traditional notions of public access in communication policy. They foster the vision of a world of seamless connectivity where access gaps have disappeared, and networked individualism thrives independently from social forces and institutional structures.

Since 2002, the Bush administration has ended a decade of direct government support to local, non-profit and community-based programs that facilitated public access to ICT, while calling for a revision of current subsidies to technology in public institutions such as libraries and schools. Over the same period, the federal government has increasingly pursued a market-oriented approach to spectrum reform for the universalization of broadband services by the year 2007. Promoting the expansion of the unlicensed spectrum and technologies that operate in these frequencies (e.g. wireless fidelity or Wi-Fi, Wi-Max), the White House called on private enterprise to grant to

"consumers broadband access in restaurants, airports, and other public places" (2004, p.12). Local governments and communities have also mobilized to take advantage of the expansion of the Unlicensed National Information Infrastructure (UNII). However, recent state battles to stop municipal and community wireless broadband initiatives illustrate the increasingly hostile climate towards bottom-up, non-commercial solutions to access high-speed services.

In this dissertation, I argue that this move away from policies that support community-based, non-profit and open-access initiatives towards regulation that promotes individual-based, commercial, and closed models of access engenders an important shift in the normative dimension of public access in communication regulation. Such changes bear significant implications for issues of governance, participatory democracy and equity in the information age. Using Austin, Texas, the state capital, as the primary site of investigation, this dissertation examines the impacts of shifting federal and state regulation on localities and on their efforts to extend public access to new technologies exploring how libraries, diverse community sites and commercial hotspots configure their services and programs.

Most academic and policy literature regarding changing notions of public interest in communication regulation has examined policy and judicial discourses, and the intent of regulators who designed these policies. This project looks at organizations enabling public access to ICT as the actual enactment of state policies and citizens' efforts to carve out spaces for people's engagement with new media. By investigating the rationale, service and program design, and targeting of users of public computing networks, I will provide analytical distinctions for understanding different notions of public access reflected by interventions crafted under divergent policy approaches. It is my goal to assess how, while enhancing public access to ICT, these divergent approaches

complement or collide with each other. I am particularly concerned with the way in which local organizations shape access as they respond to changing policies, market dynamics, technological advances, and questions of social exclusion in the information economy. Through a comparative case study of public access initiatives in Austin, this dissertation critically examines the status of public access to new technologies in a site at the conjunction of convergent media.

Texas is a pioneer of telecommunication and cable deregulation in the United States. Through the passage of the House Bill 2128 in 1995 (later renamed the Public Utility Regulatory Act or PURA), Texas became the first state in removing barriers of entry between local and long distance telecom businesses, and in decreasing controls over providers including Southwestern Bell, the dominant incumbent telco (telecommunications company). The statute also established a new agency, the Telecommunications Infrastructure Fund (TIF), to support the deployment of advanced telecommunications infrastructure in the new competitive environment. TI was expected to serve "as a catalyst and supporter of public access to an advanced communication technology network" giving priority to rural and underserved areas (TIF, 1997, p.4). Employing revenues from taxable telecom services, the agency issued almost $1 billion in grants to 6,589 public institutions including schools, public libraries, higher education institutions, and healthcare agencies for the construction of advanced telecom infrastructure. In 2002, the Texas' legislature shut down these programs responding to growing fiscal pressure, and to the dominant vision that subsidies for connectivity were no longer needed.

Arguably, Texas telecommunication policy has mirrored larger Federal deregulatory trends. The Texas experience also illustrates the ongoing tensions between state and localities for retaining autonomy and control over advanced communication

infrastructure. HB 2128 explicitly prohibited municipal "direct or indirect" involvement in the provision of telecommunication services, as a way to preempt local government competition to private enterprises. PURA actually stifled the City of Austin's attempts to build a fiber network to interconnect all homes, and support public and private uses in 1996. Most recently, in September 2005, Texas also pioneered regulation that substituted local video franchise agreements with a standard, statewide telecom-video franchise. With the enactment of Senate Bill 5 (SB 5) Texas became the first state to effectively remove local controls over cable and telecom providers engaged in the deployment of bundled advanced telecom and video services to the home.

Austin offers unique advantages to assess the implications of these shifting policy and technological scenarios on the development of initiatives furthering public access to ICT. In the last twenty years, Austin has developed as a high-tech agglomeration economy under the conceptual framework of the "technopolis wheel."[1] This strategic vision designed by leading local entrepreneurs and research institutions emphasized the cooperation among industry, state and local governments, academic and research institutions, and community groups in initiatives that promote technological diversification and economic development. Becoming a milieu of innovation has entailed large investment in technological infrastructure, research and development (R&D) initiatives, and training programs directed to support the digital economy. Availability of infrastructure seems not to be an issue in Austin. In the mid 1990s, Austin ranked among the most wired cities in the nation, and more recently the Texas capital has been recognized as the U.S. city with the third highest penetration of public wireless Internet

[1] Smilor, Kozmetsky and Gibson, (1988) Creating The Technopolis: High-Technology Development in Austin, Texas. A report of the IC2 Institute, Austin, TX. Available at http://dev.ic2.org/icc2004/publications/creatingthetechnopolis.pdf

access sites (hotspots), local wireless networks and wireless devices.[2] Beyond physical infrastructure, Austin's strategy emphasized the creation of "smart infrastructure" based on the interactions of "intelligent" organizations (academic institutions, R&D, knowledge industries, and the local government) sharing a common purpose and vision: building the technopolis[3]. Ranked as the second most creative economy in the U.S., Austin's strategy is by many accounts, a success story of local development in the 21st century (Florida, 2002). However, in contrast to these optimistic accounts of the modern technopolis, there is evidence of growing disparities in the city. The Greater Austin area appears among the top four regions with the highest wage inequalities in the country (p.xvi). Assessments of trends in urban development in the last few years have also identified residential resegregation, rapid escalation of appraised property values and lack of affordable housing as some of the main problems faced currently by city residents (Marshall, August 23, 2001; Price, October 12, 2005).

Acting as a bridge between these two contrasting realities, public access to ICT has thrived, becoming a hallmark of the Austin community. Even as the local government worked with grassroots groups involved in local cable access channels in the 1970s and 1980s, it has also partnered with citizens' groups and local nonprofits, which since 1995 have mobilized to provide access to computers and Internet in public libraries and community centers. Over the same period, the city also benefited from federal, state and private funding directed to alleviate the digital divide. The diversity of public access

[2] The Intel's Annual "Most Unwired Cities" survey ranks the top 100 US cities and regions for the greatest wireless Internet accessibility. Available at http://www.intel.com/personal/wireless/unwiredcities/. Accessed in Nov. 2005.

[3] Technopolis or technopole are terms commonly used to refer to initiatives that foster technology-based economic development. In Smilor, Kozmetsky, and Gibson terms (1988), a Technopolis is a new strategy of economic development and a new form of social and economic organization best described as a "city-state" linked to the global system through its participation in the knowledge economy. This vision is similar to the critical concept of technopolis introduced by Castells and Hall (1994) in that it refers to new forms of economic production and management characteristic of the central nodes of the global, informational economy.

programs in Austin offering connectivity, training and local content is well-documented in the literature (Chapman & Rhodes, 1997; Horrigan, 2001; Servon, 2002; Straubhaar et al., forthcoming). In the last two years, most of the growth of public wireless networks in the city has been supported by active partnerships between non-profit and users groups, the private sector and the local government (Fuentes-Bautista & Inagaki, 2006; Gillett, 2006). These conditions make Austin an ideal case scenario for assessing the impacts of shifting policy approaches on evolving notions of public access in the era of technological convergence, as reflected by the design and implementation of public computing networks.

1. EMPIRICAL PROBLEM: CHANGING NOTIONS OF PUBLIC ACCESS

This dissertation looks at policy and regulation of public access to ICT as the normative and symbolic fields of power (Bourdieu, 1986), which organizations behind public computing networks deploy to devise solutions, mobilize resources and craft their services. Policy decisions mark directions and shape ideas about particular configurations of the technology, its applications, and the market in which it operates. These decisions also establish the public interest and different stakeholders' rights of access. By surveying the history of public interest regulation in the United States, I identify and discuss the primary conceptualizations of public access in communication policy and law, focusing on how different regulatory traditions justify and promote citizens' engagement and participation in the media, their definition of access, and their conceptions of the public. I understand these several conceptualizations as different public access regimes that have evolved under distinct regulatory traditions and institutional forms as they have made their transition into the digital age. I argue that grasping the importance of public access to ICT demands an understanding of the continuities and discontinuities among

existing public access regimes, and how they have been refashioned in the shift towards a deregulated, digital environment.

The justification of state action to ensure people's access to information and communication systems rests on different principles, and has been enacted through different institutions. As discussed in Chapter Four, a historical analysis of the communication policy and law literature reveals the existence of three main discursive and normative traditions framing distinct notions of the public's engagement with the media. The first, primarily developed under the framework of broadcasting and cable regulation, has grappled with the problem of expression and how to grant public speech rights on privately owned media. In this tradition, supporters of public access argue that the media ought to be regarded as public forums over which the public and its representatives bear some access rights. Public, educational and government (PEG) cable access channels are the most prominent institutional expression of this tradition that enabled citizens' participation in the production and distribution of media messages. The second tradition has effectively granted to all Americans access to public information based on the people's right to know. Freedom of information policy that enables public access to government records through public libraries grew as expression of these ideals. A third tradition has taken shape in the last ten years, after the passage of the Telecommunication Act of 1996, which mandated universal access to advanced telecommunication at schools, libraries and rural health facilities. This tradition that opens public spaces for people's engagement with new media, stressed notions of the technology as social equalizer through fair and universal availability of Internet services at designated public institutions.

A working hypothesis of this dissertation is that in a convergence scenario, previously differentiated public access regimes have clashed, muddying both legal and

common understandings of the concept of public access and calling into question the validity of public policies on the matter. Understanding people's access rights as a function of individual property rights over conduits, networks and devices enabling increasingly mobile and high speed communication systems has undermined the justification for state action to support public access to ICT. I argue that the situation demands the redefinition of the concept of public access for the digital age taking into account the communicative potential offered by the technology, how public technological systems can effectively materialize this promise, and how they support the development of people's capabilities to realize this potential. I would like my research to provide insights and explore possible directions to rethink the notion of public access in the post-convergent era, when the sum of all technological capabilities will be able to support ubiquitous and fully multimedia systems usable by as many as possible.

It is important to bear in mind that the transition of traditional public access regimes towards an entirely digital communication environment has taken place amid several waves of deregulatory reform that since the 1980s have redrawn the map of U.S. communications (Aufderheide, 1999; Horwitz, 1989, Streeter 1996). Lowering entry barriers between various lines of businesses, deregulatory reform considerably reduced government oversight in the name of economic efficiencies and competitive markets. Deregulation also translated into direct attacks against notions of public interest as a redistributive mechanism, and as an enabler of diverse voices. Instead, policies heralding competition, innovation and consumer choice took center stage. Many prior advances of public access regulation – such as the Fairness Doctrine, the people's right to reply, and the editorial independence of PEG channels – perished or were transformed over this period. However, as I explain in the following chapters, the diversity of principles,

directions and goals set by different public access regimes are still alive as drivers of local programs and citizens' involvement in the provision of public computing networks.

Although technological convergence has made regulatory divisions between telecommunication networks and mass media systems increasingly artificial since the 1980s, the 1996 Act preserved the rules that established different access regimes for broadcasting, cable and telecommunications systems. Though allowing further concentration and cross-ownership, the statute did not expand public access provisions either in broadcasting or in cable. Neither did the law equalize people's access rights to different communication and information systems. While different degrees of the public's speech rights are recognized in broadcasting and cable legislation, the issue is ignored in the legislation of telecommunication services (Aufderheide, 1999). Nowadays, people's rights to access, send and receive communication through the Internet are mostly shaped by regulation around proprietary rights over network elements and pipelines of carrier systems (e.g. phone and cable companies). In this regard, common carriage and universal access to telecommunication systems became the most important regulatory frameworks protecting the ability of end users to produce, consume, and exchange information through open infrastructures with open standards of the Internet (Stein, 2006, p.85). In the last decade, the notion of public access to ICT has grown under this tradition, largely influenced by universal service regulation. However, as I discuss in Chapter Four, the "openness" of these systems is currently under attack through judicial and legislative challenges to the principle of network neutrality, and through state and federal actions asserting institutional uses and proprietary rights over public access networks. This project hopes to contribute to current debates over the changing notion of public interest in communication policy, and the need to rethink regulation extending social democratic values in the formulation of policy for the post-convergence era. By focusing on an

empirical assessment of public access programs to ICT, I would like to highlight the role of these initiatives as a vehicle to achieve these goals.

2. PUBLIC INTEREST IN THE NETWORK SOCIETY

But why look at the architecture and rationale of public computing networks and programs in order to discuss principles of public policy? Three main reasons guide my choice. First, as Mosco suggests, to understand the structuration of uneven systems of production, distribution, and consumption of culture and communications, it is important to understand how the agency of decision makers weaves the "sutures of power" through their social practice (1996, p. 213). Political economic analyses that assume a totalizing view of communication industries conflating issues of ownership, management and business practices of communication systems and organizations analytically fail to explain the process of structuring and change of communication and information systems with uneven power dynamics (Streeter, 1996). Critical policy analysis goes beyond technical and economic considerations, interrogating ideological and power dynamics behind policy and institutional decisions, and the assumptions and motives behind these choices. Macro-structural processes take form in the materiality of institutional culture and practices of businessmen, policy makers, public interest advocates and activists. Groundbreaking work by Robert Horwitz (1989), as well as the contributions by Thomas Streeter (1996) and Patricia Aufderheide (1999), has shown how policy analysis benefits from critical institutional analysis that unveils ideological, economic, political and class factors at play in apparently technical industry and policy choices. By interrogating the nature of technical and managerial practices behind public access to ICT, I avoid naturalized views of these programs as unproblematic and neutral expression of the communities that host them. Looking at organizational practices and the reasons to choose some technological applications over others allows me to identify ideational,

economic, and social factors shaping these initiatives. As in the case of any other institution, the practice of public access organizations is "embedded" in complex social structures reflective of uneven power relationships and hierarchical social orders (Warschauer, 2003). As I discuss in Chapter Two, social agents involved in the provision of public access to ICT do make choices based on organizational practices, their own occupational trajectories, and individual dispositions (e.g. class, ethnicity, gender) (Bourdieu 1984, 2005; Bourdieu & Wacquant, 1992). The choice to encourage and support some technological applications and to dismiss others translates into social, economic and cultural opportunities effectively made available or denied to the public.

The second reason for this approach to the study of public access networks is largely influenced by the ideas of law professors Jerome Barron (1967, 1969), Lawrence Lessig (1999, 2002) and Yochai Benkler (2000, 2006) who in the realm of constitutional law have expanded our understanding of how the architecture and overall conditions surrounding the operation of old and new media systems can effectively enable or constrain our freedoms. Underscoring that our media system is no longer the world of small printing shops that characterized the American mediascape when the First Amendment was formulated, Barron advocated in the late 1960s for a constitutionally based access right to the media as a protector and enabler of speech. Thirty years later, with his succinct claim "Code is law," Lessig persuasively argues that the cyberspace is not intrinsically "open." The openness of the Internet is enabled by its end-to-end architecture which is the real guarantee of the civil liberties we can enjoy as users of a system that enables uncensored speech, protects our privacy, asserts our right to be informed and supports our participation in the information economy. Benkler has extended these discussions, elaborating on how different logics at the network's layers can in fact translate into different definitions of the public as consumers, users or

producers of Internet content. Benkler insists that questions of choices enabled by these systems as well as our ability to choose online are crucial in defining the information environment and space of freedoms that we would be able to enjoy in the networked society. Following these reflections, I see public access organizations and networks (from libraries and community technology centers to cyber-kiosks, cyber-cafés and hotspots) as *intermediaries of access and new media services*, and the materialization of cyberspace architecture into the public real-space and physical geography of our cities and towns. Public networks are also important components of the social geography of technology, and essential material supports of culture in urbanized centers. As spaces enabling public engagement with new media, providers of public access to ICT are an integral part of the social mediation process of the digital age, with the potential to act as active nodes of connectivity between citizens and a myriad of networked, digital environments.

Third, the mode of policy directives promoting public access to new technologies has greatly relied on institutional partnerships forged at the local level. Federal and state policy programs developed a light-handed approach to public access rules to ICT, leaving many important decisions about orientation, infrastructure, and content of these public ICT initiatives in the hands of stakeholders in local communities across the nation. In fact, the first federal and state funding programs established at the beginning of the 1990s sought to take advantage of the grassroots and entrepreneurial spirit of early free-nets and community networks promoting partnerships between citizen groups and public institutions such as libraries, schools and health services. As we have argued before, as architects and crafters of these programs, the diversity of organizations behind public computing networks ought to be considered essential components of the policy process, and agents engaged in the formulation of *communication policy from below* (Fuentes-Bautista, Straubhaar & Spence, 2004). This dissertation explores the dimension in which

citizens, local public institutions and businesses engage in the construction of the actual conditions in which public participation is enabled and realized in the information society. I contend that in the digital age, public access should be understood as the expression of people's ability to define their own communication environment. Public access initiatives reflect communities and individuals' abilities to freely interact beyond increasingly commercialized digital networks. They bear the promise of democratizing communications, transforming consumers and users into producers of online information, communication and services. Conversely, they could potentially erect walls around the adoption and empowering uses of the technology, thus disfranchising certain publics. The answer to these questions remains in the hands of computing networks woven in the geography of urbanized centers, from traditional public access spaces such as libraries and community centers, to the most recent wireless broadband connections at coffee places, restaurants, airports and parks.

A vast literature deals with issues of public computing networks and their impacts. Assembled under the rubrics of community technology (Cisler, 1994; Schuler, 1995; Beamish, 1995; Chapman & Rhodes, 1997), virtual communities (Rheingold, 1994), and community informatics (Gurstein, 2000), many studies have assessed the actions of public access programs and their effects upon: 1) diffusion of new technologies, in particular in low-income and underserved communities (Servon & Nelson, 2001; Servon 2002); 2) social and economic development of their host communities (Cohill & Kavanaugh, 2000; Haythornthwaite & Wellman, 2002); and 3) the promotion of electronic democracy and the online public sphere (Turkle, 1997; Smith & Kollock, 1999). For the most part, these studies and their important contributions adopt the practitioners' perspective. They have typically studied the implementation and outcomes of public access programs, while assuming the "goodness" and "neutrality" of

community initiatives. For that matter, the notion of "community" is largely unquestioned. Few studies have interrogated the rationale behind these programs, the nature of their technological choices, and how they reflect the power dynamics of their communities (Guthrie & Dutton, 1992; Strover, Chapman &Waters, 2004; Kvasny, 2006; Kvasny & Keil, 2006). Building on their findings, I intend to explain how such local power dynamics mediate the public policy process of promoting and facilitating public access. I argue that unpacking the meaning assigned by diverse initiatives to the ideal of "community" is particularly important to understand the distinct notions of public interest ingrained in these programs. In identifying their affiliation or connection with particular users and constituencies, public access programs provide a concrete definition of who constitutes the "public", and a valuation of how that public needs to be served.

3. STUDYING PUBLIC ACCESS IN A CONVERGENT MEDIA SCENARIO

There is a strong bias in the academic literature to treat access and use of ICT as an unmediated event, and as a matter of individual's rational choice. Academic and applied research on public access to ICT has been largely influenced by rhetoric surrounding "digital divide" debates of the 1990s. Such discussions adopted a techno-utopian perspective, seeing ICT as a problem-solver and as a tool for social and economic development (e.g. Negroponte, 1996). More elaborated frameworks have tended to problematize access to technology as an issue of connectivity, technical competence and skills, or interface and content design. I contend that techno-centric assessments of public access policy have remained blind to institutional and cultural forces structuring stratified access and use of ICT. They have chosen to ignore how sometimes interventions to bridge local divides underline the hierarchical structure of privileges reproducing social inequalities; or how certain modes of service provision act as barrier of access and discourage particular applications and uses of the technology. The evaluation of these

initiatives calls for an analysis that rejects techno-centric approaches and examines the issue of digital inequalities in social context. As Castells argues, "technology is neither good, nor bad, nor is it neutral" (1999; p.65). Technology should be assessed in the particular historical, institutional and socio-cultural setting in which it is configured, adopted and deployed. Technology may be a problem-solver or problem-generator, but it is essentially malleable, allowing for its selective adoption.

Although the connection between provision and use of ICT services and programs seems obvious, most of the digital divide literature has examined "access" as an "individual" problem drawing on behavioral and cognitive theories and variables to explain differential attitudes, adoption and use of ICT, without associating it with conditions in the provision of the service (DiMaggio et al, 2001, 2004). My understanding of the relation between technology, policy, and social inequalities stems from a contingent view, one that emphasizes the social "embeddedness" of technology and its character as a social construct (Granovetter, 2002; Warschauer, 2003).

An underlying assumption of this research is that public computing networks –as any other communication and media system– are socially constructed organizations engaged in the production and distribution of various communication and information services. Grounded in a constructivist epistemology, this dissertation proposes an interdisciplinary approach to the study of public access to ICT by combining developments of social construction of technology (Bijker, Hughes, & Pinch, 1987; Dutton, 1999; Williams and Edge 1996), new institutionalism in sociology (DiMaggio, 1987, 1994; Granovetter, 1985; Granovetter & Swedberg, 2001; Powell & DiMaggio, 1991) and critical sociology of culture (Bourdieu, 1980; 1993, 2005; González, 2000).

Social construction of technology (SCOT) emerged as a critique to crude forms of technological determinism that treat technologies as physical devices or tools that operate

outside of society. Rather, SCOT proposes to see technological innovations, artifacts and networks as social systems (Hughes, 1983), and as mechanisms of regulation and control of social dynamics (Noble, 1977). The theory postulates that the primary way in which society is embodied in technological system is via the actions of relevant social groups, or identifiable groups of individuals or institutions that compete for defining socially acceptable ways of using the technology. Relevant social groups of public computing systems are not limited to providers of public access programs but they also include advocates of access, regulators, volunteers, and suppliers of public access sites (e.g. broadband providers). Choices made by actors in the process of innovation, adoption and use of the technology significantly influence the outcome or innovation (Pinch & Bijker, 1987). Interpretive flexibility defines the innovation as an open process in which periods of standardization are followed by others of trials and experimentation. In the context of this project, the corollary of this argument is that public access is not predetermined by technology or by policy alone. Likewise, this dissertation assumes public access programs as social systems and outcomes of interactions between diversity of agents engaging with particular policy discourses, and institutional, technological, and historical factors surrounding public computing networks.

Williams and Edge (1996) have suggested that SCOT can inform critical analyses of technology policy by broadening our understanding of underlying forces shaping the implementation of regulation. From the same perspective, William Dutton and others propose evaluating policy and its potential impacts on the provision of telecommunication services by analyzing the process by which providers' actions and decisions "reconfigure" access to information, services, people, and other technologies (Dutton, 1999; Dutton, Gillett, McKnight, & Peltu, 2004). I borrow this view by focusing on how public computing initiatives – from non-profits, firms, local government, and

libraries – implement their services and articulate the rules of engagement with new technologies. As Guthrie and Dutton (1992) argue, issues of social and technical choices behind the adoption and configuration of public access services are equivalent to the formulation of public policy on civic participation.

One of the common critiques of SCOT is to point out its excessively agency-driven perspective in the study of innovations, which leads the theory to overlook how deeply institutionalized social and cultural values shape components of a technological package or actors' interactions and practices more generally. This is a matter that developments of new institutionalism in sociology have consistently addressed. Sociological formulations of new institutionalism argue that individual decisions are framed by institutional settings, and individuals find themselves "embedded" (Granovetter, 1985) in organizational and social sectors or "fields" that bound their actions (Powell & DiMaggio, 1991). Proponents of the theory underscore the importance of symbolic and cultural systems surrounding institutions and fields since they provide legitimacy to organizations' structures, functions and goals, and the 'rationality' they define for individual action (p.13). Issues about the limits of such bounded rationality and its utility are one of the key problems explored by this approach.

Warschauer (2003) has called attention to the advantages of the institutional perspective to understand how routinized interaction around technology shape the relation between people and ICT providing resources and set boundaries for their technological preferences and uses. In his view, the "institutional embeddedness of technology" offers a better alternative than the concepts of digital divide or digital inclusion because it brings together social context, social purpose and individual action in the analysis of how adoption, use and impacts of ICT can effectively promote social inclusion (211). Moreover, as Warschauer suggests, a critical perspective is warranted in

examining relationship between institutions, ICT and social inclusion. Public access organizations are sites for the rearticulation of power and resources in the network society. I propose deploying Pierre Bourdieu's critical theory of praxis to advance our understanding on how structural conditions (e.g. policy, technological innovations, and culture) interplay with the agency of members of institutions, non-profits, firms and social agents in the process of structuring the field of public access to ICT in the city of Austin.

Bourdieu's work on the role of organizations in the social construction of the educational field (Bourdieu & Passeron, 1977) and markets (Bourdieu, 2005), and the acknowledgement of his contributions to the sociology of institutions (Powell & DiMaggio, 1991) and economic sociology (e.g., DiMaggio, 1994; Granovetter & Swedberg, 2001; Guillen et al. 2002) illustrate how a critical sociology of culture can shed light on the study of the role of organizations in the constitution of cultural and economic reality. Inspired by a structural constructivist[4] approach to the study of processes of reproduction and transformation of society, Bourdieu proposes the development of a "relational" view that recognizes the dialectic way in which structure and agency interact in a mutually structuring process (1989:19). Bourdieu himself explains that he is suggesting more than a theory but rather a method to study cases where the individuals and the social structure are involved (Bourdieu and Wacquant, 1992). First, says Bourdieu, he is trying to describe and analyze how the individual or social agent develops particular dispositions or *habitus* molded by his interaction with the social structure and second, how this individual participates in diverse, specialized and hierarchical systems of social relationships called *fields* (pp.33-36). Individuals display

[4] Bourdieu prefers the definition of *structural constructivist* over others to acknowledge the two sides of reality. On the one hand, there is a social world of objective structures independently from agents' will and consciousness. On the other hand, there is a social genesis that resides in the perception and cognitives schemes that guide social action (1989:14-15).

their agency and change their position in these complex systems of social relations through the acquisition and exchange of various resources or *capitals* (economic, cultural, social and symbolic), in a process characterized by power and social struggles. Building on Bourdieu's conceptual framework, I propose to understand public access to ICT as an emergent specialized field of the knowledge economy where diverse social agents with particular dispositions interact through the exchange and struggle for various forms of capitals surrounding ICT.

The conceptual tools described above provide an analytical lens through which I examine the process of institutional practices and cultures of public access providers as they structure or configure access to ICT. I introduce the concept of *access cultures* as a descriptive and analytical category for the study of access and use of ICT. I define access cultures as the assemblage of material supports (e.g. hardware, software), symbolic constructs and social practices constitutive of organizations specialized in ICT access that mediate individual's uses and common understandings of the technology. The main goal of this dissertation is to examine the implications of policy shifts in the shaping of access cultures, and to explore the ways in which access cultures mediate citizens' engagement with new media.

To summarize, I propose to understand public access initiatives (from libraries and community technology centers to cyber-kiosks and hotspots) as institutions with a dual role as *intermediaries of ICT services* and *as cultural intermediaries* of communication and information flows. In the first role, access initiatives can be regarded as specialized agents that operate in the for-profit and non-profit realm of the knowledge economy dedicated to the production, distribution and consumption of new media. They can potentially act as both redistributing mechanisms in the new economy and hubs in the cycle of creation and diffusion of innovations. Issues of availability and accessibility of

these services bear important equity implications. In the second role, public access projects work as gatekeepers of communication and information flows articulating the experience of users of ICT, and framing the meaning, utility and experience of electronic networks and services. They are poised to play an important social mediation role in the digital age with significant influence on matters of civic participation and democracy.

Intermediaries of digital networks are common targets of regulation seeking to optimize the cost of enforcement and monitoring of rules (Lessig and Resnick 1999, p.413). For example, regulation protecting minors from obscene online content has typically made intermediaries liable for the application of filtering and blocking mechanisms as in the case of public libraries. However, what is usually ignored by regulators is how intermediaries' institutional practices and their particular agendas also act as filters mediating access. Such dynamics have significant implications for issues of equity and justice in the digital age. From this perspective, as Lentz et al. (2000) propose, the "digital divide" can be understood as the process by which digital exclusion is created and perpetuated through social and economic practices surrounding institutions that offer access to ICT. I assume this view in examining organizational dynamics of public access providers.

3.1. Propositions and research questions

With reference to the discussion above, I identity three main propositions guiding the questions explored by this dissertation. First, I have suggested that policy and regulation on public access to media have evolved under different traditions and institutional forms, making the transition towards deregulated, digital media environments. I hypothesize the existence of three main policy traditions and discourses about public access: 1) access to information (based on the right to be informed), 2) access to electronic forums (based on the right to speak), and 3) access to markets (based

on economic rights of fair access to markets and resources). The first task of this dissertation is to historically trace these traditions, and describe how each of them has been recrafted into new policy frameworks regulating the production, distribution and consumption of advanced telecommunication services.

Second, I have argued that regulatory discourses on public access have found expression in different institutional forms and modes of access provision of public Internet services. I hypothesize the emergence of a distinct field of public ICT access and the existence of diverse access cultures mediating the public's engagement with new media. The second task of this project is to describe the historical configuration of the field of public access to ICT, its boundaries and logics that is the particular dynamics and logics that give visibility and identity to these initiatives. In explaining the configuration of the field of public access in Austin, I shall explore the way in which each institutional form develops distinct modes of access. I look at how organizational structure and mission, institutional dispositions, occupational trajectory of staff and volunteers, and embeddedness of organizations, funding and sustainability shape services offered to the public.

Third, I have contended that a market-driven approach to public access policies, the convergence of technological platforms and applications (e.g. wireless broadband, collaborative networks), and perceived social functions of the technology are challenging pre-existing notions of public access. The third task of this dissertation is to trace and describe the directions of the changing notion of public access to new media as reflected by providers' conceptualization and design of these services, their intended uses and targeting users. A special concern of this research is to reflect on the role of state action, and on the role of local powers in particular, to shape new directions for efforts directed at enabling spaces for people's engagement with new media technologies.

This project addresses the following questions and sub-questions:

1. How has public access to ICT been framed by public policy facilitating the transition toward convergent media environments?

a. How has federal policy defined public access to ICT?

b. How have state and local powers shaped these understandings?

2. What are the main characteristics of the field of public access to ICTs in an American technopolis?

a. What are the main justifications for providers' actions and engagement in the supply of public ICT services in Austin, Texas?

b. How does the embeddness of organizations shape different access cultures?

b.1. What are the institutional dispositions of public ICT access providers?

b.2. What is the relation between occupational trajectories of agents engaged in access initiatives and the formation of distinct access cultures?

3. How has public access to wireless broadband been conceptualized by different access cultures under a market-driven regulatory environment?

a. What is the rationale behind the main models of public Wi-Fi access?

b. What are the notions of the "public" held by these initiatives?

c. What are the assumptions made about the possible social applications of the technology?

This dissertation is organized as a comparative analysis of different access cultures and their trajectories, as established by distinct regulatory traditions (access to information, electronic forums, and the market), and institutional cultures (libraries, community centers and free-net sites, and wireless hotspots). The introduction constitutes Chapter One. Chapter Two discusses Bourdieu's theoretical tools, their applications to

institutional analysis, and how they can advance the study of media organizations, and to public access initiatives in particular.

Chapter Three lays out the methodological plan of study, which is based on a comparative case study of the main models of public access to ICT. They are: libraries, free-net and community access sites, and wireless hotspots. Each of them is treated as a separate case study for the analysis. Data collection methods include participant observation, survey of organizations services and programs, semi-structured interviews with city officers, staff, managers and volunteers of public access programs, and secondary data from previous studies.

Chapter Four locates the issue of public access to ICT in the broader context of public interest policy in communication regulation. A socio-historical perspective helps to identify connections and divergent points between different public access traditions. The endeavor was not an easy task. Just as different regimes regulated the press, broadcasting, cable, and telecommunication services for decades, different strands of scholarship examining the public's right to access communication systems have evolved separately and are scattered through different bodies of literature. In this section, I attempt to draw an overall picture by tracing the trajectories of public access regimes in their transition to current formulations of public access to ICT. The chapter examines the dynamic tensions between federal, state, and local access policy by focusing on different layers of state and municipal action in the organization of the field of public access in Austin, Texas. A chronological analysis of state and local policies and their impacts on the configuration of public access programs serves as background of the discussion. The chronology of events starts in 1995, when the state of Texas launched a significant telecommunication reform, and the city of Austin saw the emergence of the first public access programs to ICTs.

Chapter Five continues this discussion through the examination of the turning points and significant moments in the development of the field, identifying the trajectory of various city and citizens' access programs, and integrating the accounts of actors involved in access initiatives. Particular attention is devoted to understand the role of local powers in this process. A description of the configuration of the field of public access is presented by exploring, the institutional dimension of provider organizations, programmatic offerings, their organizational trajectories and cultures.

Chapter Six discusses the different conceptualization of public access services, their targeting users and intended applications under the convergent media scenario, through the case of the configuration of public Wi-Fi in the city of Austin. The goal is to tie the discussion to main regulatory shifts and specific characteristics of the organizations engaged in the provisioning of these services for the public.

Chapter Seven discusses the implications of this research and describes the main factors shaping public Internet access. In addition, I propose a framework to rethink the role of public access to ICT in a post-convergent media environment.

3.2. A word on reflexivity

My interest in studying various organizational forms enhancing access and use of ICTs in public stems from my concern to critically evaluate regulatory and social dynamics behind the configuration of information and communication systems, and their impact on historically underserved groups. If the challenge of governments and practitioners is to harness the potential of communication technologies to promote democracy and social wellbeing, the test for social scientists is to pursue a research agenda that helps us to understand the conditions in which access and use of these systems contribute to the realization of these goals. Social research on technology should interrogate the process by which communication technologies support social inclusion, or

on the contrary, how they become a tool for the reproduction of social inequalities. Questions about regulation, configuration and intended uses of these systems are central to understanding how new media technologies can actually enable people to take control of their communication environments.

On a personal level, my interest in this project emerged from my own experience as a practitioner implementing telecenters in Venezuela. In Venezuela, like in other neighboring countries I visited and worked in, issues of access and use of various forms of information and communication services are linked to profound economic and social divides. In these nations, public access to ICTs developed out of thriving initiatives of the informal economy meeting the needs of significant portions of disenfranchised population with no means to afford home access. In the middle of the troubled and sometimes chaotic urban centers of South America, public access to technology has taken on many forms and uses – from neat public computer booths to improvised computer stands in convenience stores or *bodegas* –, providing a live connection with opportunities otherwise denied to the public. However, in my practice I was continuously faced with questions about how particular contexts facilitated or hampered access, and people's real ability to use the technology to improve their lives. The urban landscape of possibilities for access to new communication technologies was transformed when I came to the U.S. However, many of the problems I observed were familiar.

As I entered this country nine years ago as an immigrant, Latina women living in Buffalo, New York, I worked for eight months as an operator in a large call center that received ads for more than 500 newspapers around the country. There I found that my co-workers, mostly women many of whom had not completed high-school education, got their first opportunity to be in touch with computers through the reality of a pink-collar ICT job. Caught in the dynamics of the digital assembly line, their experience with

technology was reduced to mechanical, performative tasks through computers. Offering no web access, these computers were configured as an intranet with surveillance capabilities. I remember my surprise when I discovered that some of my co-workers considered web navigation and web searches really daunting tasks. For them, technology was clearly not a life enhancer tool. On the contrary, technology was transformed in the wall separating them from career and personal development. Where should they turn to? In what spaces could they develop capabilities to use the technology in ways that would advance their aspirations and quality of life? Given my professional background and interest in technology, I turned to public spaces just to discover that public access had very different meaning in the U.S. Since arriving in the United States, I have become intrigued by the social forms of public ICT programs, and how different the experience of access was in this country. Nowadays, when I share conversations and insights with researchers and colleagues, and with staff, volunteers, city officials, advocates, and users of public access programs, I am still puzzled by the commonalities and differences in our drives and perspectives on these initiatives. Therefore, I see this project as an ongoing, dialogic exercise to improve our understanding about how we can structure communication systems that support human development and more democratic and participatory forms of social organization.

When I apply reflexivity to understand my role within this study, I see myself simultaneously in different locations either as an insider (Schon, 1983) or as an outsider-within (Collins, 1990) public access initiatives. As volunteer and board member of Austin Free-Net I have developed an insider view of one of the organizations examined in this study. I was invited to assume this role by the leadership of the organization in August 2004 after I started my fieldwork. Previously, I had asked for their permission to sit in their board meetings, and to observe their work at some sites. I explained to them my

research interests, and I have asked them to remain aware of my work as an observer of their organizational practices. Gaining entry into these groups was facilitated by the presence of Ana Sisnett, executive director of AFN. As a Latina and a woman in technology, Ms. Sisnett and I shared insights and information about the practice of access and its importance in the U.S. and abroad. Ms. Sisnett was supportive of my research and facilitated my contact with AFN members and partners as well as with numerous activists and advocates of technology initiatives in the city of Austin.

A second front in which I developed links with access groups was as a participant of graduate seminars and research projects on digital divide issues carried out by faculty of University of Texas. Classes led by Professors Joseph Straubhaar, Gary Chapman, and Sharon Strover were instrumental in examining and gaining a deeper understanding of the contours of digital inequalities in the United States, and in Austin in particular. As the field of our investigations, the case of Austin was the object of discussion and analysis in these seminars. These spaces also were opportunities to grow connections with members of the Austin community, state and city officials. Through these contacts, I pursued and performed as an intern in the Telecommunication Infrastructure Fund of the state of Texas during the summer of 2003. The experience greatly helped my understanding of state policy supporting access at designated public institutions. During this period, I also carried out interviews with grant administrators and state officials about several aspects of these programs. In sum, through my academic and professional work as well as through my personal involvement with public access initiatives, I have found different standpoints to interrogate the object of my study. I argue that this study benefits from my multiple positionalities as insider and insider-outsider. On the one hand, this work is responsive to the scope, knowledge base, and rigor of academic research. On the other hand, it documents diverse aspects of the practice of public access organizations from an

insider perspective. On occasion, through the research practices of reflexivity, I will also offer my personal comments as another register that describes my experience as an actor in the field of public access in Austin.

Chapter 2: Social Theory
Towards a critical institutional analysis of access in the convergence era

The research described in the introduction draws upon a range of scholarly work in the fields of social construction of technology, new institutionalism and sociology of culture. This chapter presents the social theoretical framework of this dissertation examining relevant literature in these areas. Each perspective is introduced in separate sections, explaining its application to the study of issues of configuration of public access to ICT. The goal is to devise a set of social theoretical tools to advance critical analysis of new media policy and regulation.

In the last decade, work by Yochai Benkler and Lawrence Lessig has brought new understandings about the importance of regulation of new technological systems by unveiling the mutual constitutive process that links network architecture and structures of new media organizations to social and normative dimensions of policy and law. Benkler calls attention to the importance of "choices" over configuration of "network layers" and the implications for people's rights to speak and access information online (2000, p.562). Lessig has effectively illustrated this relationship with the phrase "Code is Law" highlighting that it is in the very architecture of the Internet where the actual rules of engagement with new media are established. Network architecture refers not only to the Internet's technical protocols (e.g. TCP/IP) and standard applications (e.g, browsers or a digital certificate standard) but also to the "entrenched structures of governance and social patterns of usage" of digital networks (Lessig and Resnick 1999, p.397). It is precisely in this upper layer which I call the *social or institutional layer* where users and intermediaries of access make "choices" establishing rules of engagement with the technology. By intermediaries of public access I mean businesses, organizations or

institutions that mediate the exchange of information and communications between senders and receivers in networked digital environment in public spaces. They encompass telecom and cable providers, libraries, schools, and commercial hotspots (e.g. coffee places, bars and airports). Following Lessig and Benkler's approach to regulation of digital environments, I argue that an evaluation of public access policies demands close attention to issues of configuration of services and institutional practices of public access providers.

Social theory enhances policy analysis by interrogating the nature of social dynamics and assumptions behind policy interventions. As Garnham argues, "information politics", or questions about organization and control of cultural and material resources of communication systems and organizations are central to understanding the existing social order, and the system of hierarchies it supports (1999b, p.78). Research on access to ICT should focus not only on how to promote the diffusion of new technologies but also on how technological solutions can support the spread of socio-economic and cultural competencies, fostering social inclusion (Garnham, 1999a). This chapter theorizes the role of the social or institutional layer of access in framing adoption and social uses of the technology, and how policy and regulation intervene in this process. Focusing on institutions as primary intermediaries of Internet access and use helps us to build a socio-centric approach to analyze public policy dealing with the issue of digital inequalities. As a set of material practices and symbolic constructions of technology, access organizations are primary spheres for the articulation of applications and understandings of new media. The following section draws on the work of William Dutton to devise a working definition of access to ICT. Then, I reflect on why an institutional approach is needed to examine access issues. Finally, I discuss how critical

cultural theory can enhance the understanding of the relation between policy, access organizations and social uses they promote.

1. CONCEPTUALIZING ACCESS TO ICT FROM A CONSTRUCTIVIST PERSPECTIVE

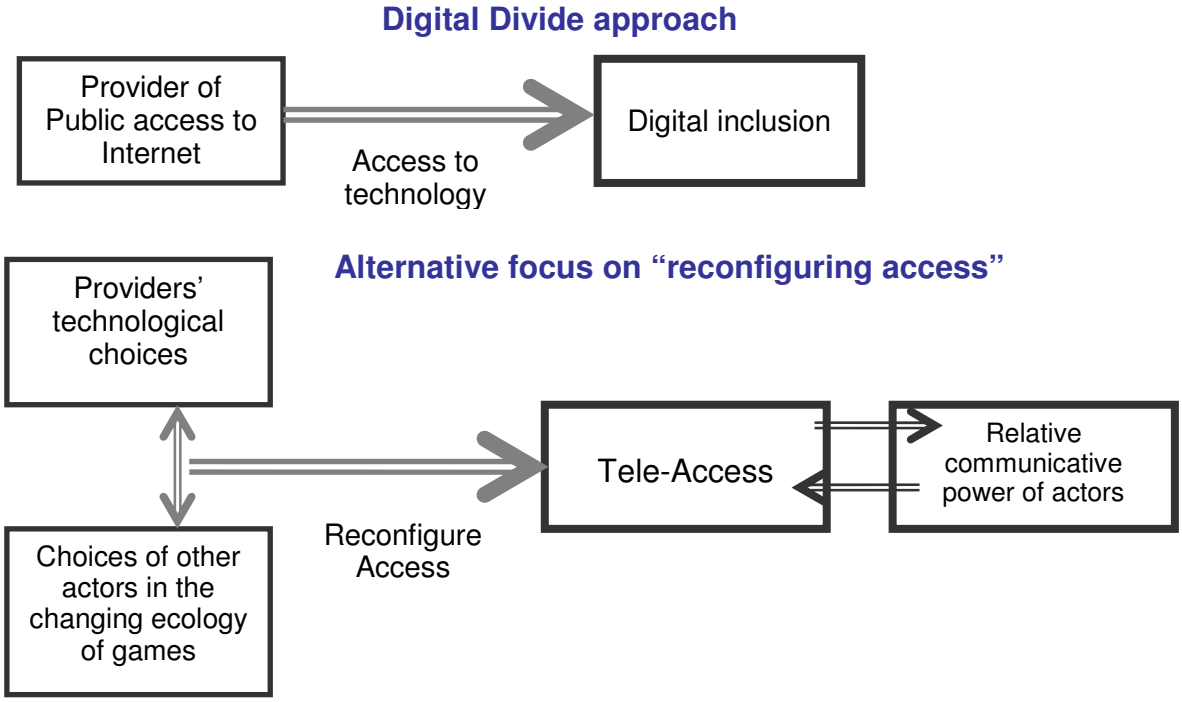
Social construction of technology (SCOT) has served as the theoretical framework of a number of studies examining the problem of public policy and access to new media. In this tradition, the work of William Dutton and his collaborators has been particularly influential, calling attention to how the configuration of access systems and services bears significant implications for the kind of social benefits supported by the technology. Access technologies, he contends, are tantamount to public policy in that they that can influence social behavior long after these decisions are made (Dutton 1999; Guthrie and Dutton, 1992). Furthermore, access technologies can mediate people's "communicative power", that is, people's ability to freely interact and function in today's information society. From a social constructivist perspective, Dutton stresses that the outcomes or potential benefits brought by access technologies will depend on the choices made by "players" (e.g. industry, providers, regulators and users) who interplay within a "complex ecology of games" (1999). I find Dutton's conceptualization valuable in understanding access as the social process by which different stakeholders mediate uses of ICT. In the following section, I will review the theoretical model proposed by Dutton, and discuss its advantages and limitations for the study of public access computing systems.

1.1. Reconfiguring access to ICT

The focal point of Dutton's model is not "access to technology" but rather how "tele-access is configured." Dutton rejects the idea of ICT networks as "neutral technologies", and the notion of "access to ICT" as a fixed category that always yield

pre-determined outcomes. Instead, he argues, we should understand access as a social process by which actors shape and re-configure systems and rules that support computer-mediated communications. This vision of access can help us to move beyond the simplistic and dichotomous view of the "digital divide" by interrogating why and how certain systems reproduce digital inequalities while others facilitate inclusion. The technological determinist framework of the 'digital divide' approach assumes that "access to ICT" would always lead to social inclusion. However, a reconfiguration of the access perspective assumes that outcomes of tele-access are contingent to the choices made by different actors in the process of mediating access (Figure 1). Focusing on how technological systems are configured can help us to reflect on what kind of social uses are enable by the technology, and what role public access initiatives play in social mediation.

Figure 1: Perspectives on access.



Source: Dutton et al (2004)

In Dutton's model, tele-access is an analytical category employed to refer to the extent to which stakeholders use different technological applications to gain access to four types of resources: people, information, services, and other technologies. Each dimensions of tele-access entails particular uses of the technology. For instance, getting access to people refers to "communication interactions" through applications such as e-mail, instant messaging or Internet phone calls. Access to information demands "information retrieval" applications (e.g. online news reading, listening radio) while access to services require "transactions" applications (e.g. downloading music, e-shopping). Having access to technology can mean connectivity to particular infrastructure or software to use it or reconfigure it as well (e.g. anti-virus protection. Wi-Fi networks). Table 1 presents some examples of how we can conceptualize Internet access.

Table 1: How Internet reconfigures access.

Internet provides access to:	**Kind of Internet activities:**	**Example:**
People Reconfigures how one ***communicates*** with people, who you interact with, who you know, where/when you interact with.	Inter-creativity between individuals and within groups; other on-to-one, one-to-many, many-to-many communications	Emailing and instant messaging, collaborative work; video-conference; virtual class-rooms; online gaming; muds and chats; blogs; vblogs
Services Influences ***transactions*** you can do online, when you can do it, when you can do it and how much it costs to do it; where and when you buy other products and services; who pays what to whom –and how it is paid.	Conducting electronic transactions and obtaining electronic services from distant or nearby sources; online delivery of multi-media products involving large amount of data	Downloading music and video; e-shopping; e-banking; tele-medicine.
Information Affects how you ***retrieve*** information; what you read, hear, see –and know	Retrieving, analyzing and transmitting images, video, sounds, statistics, etc.	Online news streaming; listening and watching audio/video streaming; data mining; browsing and web searches.
Technologies Shapes ***how and when you connect to and manipulate*** Internet applications and other ICT	Producing and using broadband know-how, equipment and techniques to shape access to, and use and consumption of, the Internet and other ICT	Broadband telecommunications networks; wireless networks; network security; anti-virus & anti-spam; child protection software.

The notion of tele-access as a multi-layered category, involving diverse applications, uses and skills, is valuable in drawing connections between types of functionalities enabled by access institutions and the social uses supported by public Internet initiatives. The technology may have the potential to equally support multiple applications and social uses, but in the design process certain applications are privileged over others. Likewise, how technological applications are introduced and presented frames their use. According to Dutton, this process is shaped by the "games" followed by different "players", including users. "Games" refer to formal and informal sets of rules that govern different aspects of uses or non-use of technology. They can include regulations such as copyright agreements, interconnection agreements, surveillance, open government policies, or institutional and social conventions such as criteria for filtering and blocking at libraries, acceptable use policies, and speech conventions in chat rooms. The metaphor of "players" suggests that stakeholders act as purposive actors responding to rules of the game and pursuing a goal (Dutton, 1999, p.14).

As I shall discuss later, the game theory conception of Dutton's model imposes serious limitations for the critical analysis of access. However, I find his framework valuable to conceptualize "access to ICT" for several reasons. First, his perspective accounts for the different dimensions in which ICT can mediate human interactions (communications, information, transactions & connectivity). Second, it underscores the power that different intermediaries of access (e.g. broadband providers, libraries, community centers, coffee shops) may have to shape the delivery, consumption and use of ICT content, services and platforms. Third, it points to the normative dimension in which policy, institutional rules and social conventions shape tele-access. Finally, evaluating public policies and the configuration of tele-access helps us to realize that all

rules dealing with particular aspects of communication industry, services and markets ultimately affect people's ability to freely interact and function in the information society.

Strover has invoked SCOT as a possible venue to understand how public access systems such as community technology (CT) initiatives espouse different notions of access (2005). The author argues:

> "Many studies that assess the effectiveness of digital divide programs over-emphasize the significance of the physical apparatus of public access and fail to address how communities negotiate the meaning of such access. This narrow definition of access frames it as simply the provision of free computer and Internet access for public use, without taking into account what users do with access or how institutions restrict users' access through establishing policies and guidelines" (23).

A few studies have explored the social construction of public computing systems and its impact on tele-access. They illustrate several ways in which the institutional and organizational structure of access programs can act as a barrier to access. They have also revealed the at times contentious character of the relations among state agencies, local institutions, and users historically excluded from the formulation of these projects.

Kendall Guthrie and William Dutton (1992) carried out one of the first constructivist analysis of public access systems examining the development and use of Public Information Utilities (PIU) in three Californian cities (Santa Monica, Pasadena and Glendale) for e-government and community applications. The study also explores the case of a city that had decided not to adopt the technology (Irvine). The study demonstrated how very similar projects and technologies resulted in very different systems and applications. In some cases, the experience resulted in the design of public access systems with limited capacity to support interactivity between citizens and local government, or in the enactment of public access initiatives with no participation of the public in the definition and direction of access programs. Researchers concluded that pre-existent technological access models, political culture of the locality, and organizational

arrangements between intermediaries of access constrain the range of choices in the design of public computing networks and their uses.

SCOT has also guided recent research on the boom of public Wi-Fi networks in American cities and its connections with issues of network architecture and deployment, and broadband access and its social uses. The excitement created by the grassroots culture of emerging wireless community networks and muni-wireless initiatives has fueled hopes for the creation of innovative applications and services for all. Examining the case of three cooperative Wi-Fi projects, C. Sandvig (2004) found that the primary goal of the Wi-Fi groups was to strengthen social ties and technical expertise of group members while ignoring broader social needs. The author concludes that, different from the community network movement of yesteryear, Wi-Fi groups tend not to pursue larger societal goals of fostering strong democracy, social capital, and economic opportunities.

We have also examined the social forces behind the explosive growth of public Wi-Fi in Austin, TX from a SCOT perspective (Fuentes-Bautista & Inagaki, 2006). In the case of Austin, the development of strategic visions of public Wi-Fi services among user groups and local startups provided a fertile ground for diverse partnerships among nonprofit groups, broadband providers, wireless ISPs, and the city government. However, we found evidence indicating that prevailing public Wi-Fi initiatives have a strong commercial bias focusing efforts in more prosperous and affluent areas of the city. Our observations suggest that the institutional culture and goals of Wi-Fi providers, their visions of social uses of the technology, and targeting of users translate into networks or "modes of access" that only cater to the "connected." This ignores the needs of people with no ability to use the technology, who may lack mobile devices or the economic means to acquire them. These patterns of network development have resulted in an uneven geography of public Wi-Fi networks in Austin that reinforces the historical

socioeconomic divides in the city. On the whole, results of these recent studies remind us that the question of adoption cannot be reduced to mere connectivity. Applications of the technology, its intended uses, and the spaces in which those usage goals are realized constitute critical dimensions in a sociological inquiry of technological innovation.

While SCOT has been a fruitful venue to theorize the connections between regulation, configuration of public computing systems and tele-access, the theory itself does not provide a strong epistemological framework to critically examine how structural constraints (e.g. economics, regulation and politics), individual agency and ideological factors interplay in the process of design, adoption and use of these systems. Furthermore, most work using SCOT is committed to an agency-centered approach in which structural constraints are considered as secondary variables in the process of design and implementation of technology. In response to these limitations, Actor Network Theory (ANT) has been particularly influential examining the decision-making process behind innovations by looking at what actors do, modes of actors' actions, and actors' rationale for their actions in the context of their institutions and in interaction with actants[5] (artifacts embodying previous technological choices). It is argued that this approach captures the notion of innovation as a continuous process of transformation rather than observing it as a series of independent events (Callon, 1987; Law & Hassard, 1997). However, it is precisely this emphasis on the innovation process as isolated from socio-structural developments and issues of power that opens the door to most of the criticisms of SCOT (Clayton, 2002; Klein & Kleinman, 2002).

Another difficulty with constructivist studies of technology is the misconception of socially relevant groups or actors as a set of rational agents performing purposive

[5] Actants is a somehow slippery category that tries to account for the trajectory of technological choices that precede the development of any innovation. In the darkness of the 'blackbox' lies the rules and institutional history of every technology.

actions. On the basis of such postulates lacking stronger anthropological underpinnings, the theory falls short in explaining ideational variables behind the agency of relevant groups (providers, policy makers, advocates of access, users, industry). This fact is reflected in the use of language borrowed from functionalist approaches to organization theory (e.g. ecology of games, players, strategies) that tacitly reduces actions such as use or non-use of technology to rational choice. This framework leaves little room to discuss how issues of power and ideology mediate access, or to consider how class, gender and ethnicity operate as factors behind particular configurations, applications and uses of the technology. These aspects are fundamental for critical social research and policy analysis of technology. On the one hand, without consideration of these categories, social research of technology runs the risk of falling into the traps of techno-centric interpretations of reality. On the other hand, critical policy analysis should strive to make explicit ideological factors driving policy decisions. Both aspects are fundamental to understand public access to ICT.

As several scholars have pointed out, the so-called community technology movement, the main advocate for access to ICT in the last decade, arose in close affinity with technology enthusiasts who embraced libertarian and neo-liberal discourses fusing market ideals with a hip techno-culture (Mosco, 1996; Streeter, 1996). The trajectories of other social groups engaged in access to ICT may be more similar to that of their precursors in public access television who implemented discourses of access as a community building block and enabler of free-speech (Linder, 1999). In recent years, increasing partnerships between CTCs and social service programs (youth groups, senior centers, homeless shelters etc) have attracted a significant number of agents associated with educational and community development agendas (Servon & Nelson 2002; Servon & Pinkett, 2005). In this changing organizational context, accounting for ideational as

well as for structural variables is crucial to understanding the forces behind the configuration of different public access models.

Introducing structural considerations to the equation, and explaining their interaction with ideational factors has pushed SCOT researchers to look for other epistemological and methodological paths in addition to those originally suggested by the theory. Historiography has been a particularly valuable methodology in this endeavor, fleshing out accounts of technology as social processes linked to politics and economics (Noble, 1977; Hughes, 1983, 1987). Important theorizations have been developed around the discussion of how markets and economic interests shape technological systems. Social constructivists argue that through their rituals of exchange and promotion, markets can be seen as socially constructed spaces where meanings about the functions of innovations and technologies are shaped. Thus, legal, political, cultural and information processes at play in market dynamics yield significant impact on the trajectory of innovations. These studies have looked at the role of users' gender in shaping tech markets (Kline & Pinch, 1996), how networks of industries construct markets (Granovetter & McGuire. 1998), and at how markets normalize views of acceptable uses of the technology (Bose et al., 1991).

In spite of the important contributions of these studies, theoretical advances have been made in a piecemeal basis without integrating them into an overarching, critical SCOT framework (Williams & Edge, 1996). In this dissertation, I attempt to expand the SCOT perspective by incorporating insights from the viewpoints of new institutionalism and critical sociology of culture. This conceptual model is intended to critically examine social and institutional practices surrounding the design and implementation of public computing networks. Specifically, my approach blends Dutton's notion of reconfiguration of access with the concept of social embeddedness of institutions under

Bourdieu's critical epistemology of culture. In the following section, I explain how an institutional perspective can enrich SCOT. Finally, I sketch the main traits of Bourdieu's work and its pertinence to my research by introducing the conceptual categories employed in this study.

2. NEW INSTITUTIONALISM AND THE SOCIAL EMBEDDEDNESS OF TECHNOLOGY

Institutional analysis can serve as a tool to overcome the agency-centric mode of SCOT approaches by focusing on how the action of agents interplays within particular social settings and structures. New institutionalism emerged as a reaction against behavioral interpretations of political and economic analyses that treat collective action as the aggregate consequence of individual choice (Powell and DiMaggio, 1991). It challenges deterministic varieties of functionalism and individualism, shedding light on how meaning is socially constructed through social interaction and symbolic exchanges that take place within organizations and institutions. In a significant departure from old forms of institutional analysis that saw organizations as undivided wholes, new institutionalism proposed to understand organizations as "loosely coupled arrays of standardized elements" (p.14) Institutions are not the "outcome of purposive action by instrumentally oriented individuals" (8) but rather they are the result of routinized interaction, scripts, schemas, and taken-for-granted expectations that shape individual action. Socialization, education, on-the-job learning and conventions frame individual decisions in institutional settings.

Drawing on social informatics (Kling et al., 2005), Mark Warschauer (2003) first argued for the value of concepts and perspectives of new institutionalism in circumventing technological determinism in the analysis of digital inequalities. Warschauer argues that the interaction between individual and institutional context is particularly powerful in shaping uses of ICT because of their malleable nature, and their

character as facilitators of human interaction (p.208). For example, the impact of employing ICT in distant education courses can be only assessed in relation to the social function played by a given educational institution. One of the functions of academia is to sort out students (e.g. by different tiers and levels of colleges and universities) through a series of mechanisms including admission, test scores, and financial aid. But does the use of the technology for distance education in certain institutions (e.g. community college) magnify the stratification of the system by adding other tiers and hierarchies, or does it make the system more horizontal and accessible to everyone? This is what Warschauer terms the "social embeddedness of technology" referring to how technological choices and preferences are culturally and historically embedded in the material and symbolic practices of institutions. In the context of ICT access, how can relevant institutions frame uses that can be more democratic, equitable and socially inclusive?

Within the broader literature of studies of institutions in sociology, new economic sociology (NES) has further developed the concept of "embeddedness," highlighting the relational and social nature of economic action. NES is sharply critical of neoclassical economic analysis that reduces economic action to the rational choice of isolated individuals (Granovetter & Swedberg, 2001). Instead, NES argues that all economic action is "embedded" in ongoing networks of social relations. In other words, all economic actions take an interpersonal and intergroup expression materialized through the exchange of resources, goods, ideas and services. In its early formulations, the theory's emphasis on social networks (Granovetter, 1985) came at the expense of a proper account of the role of culture in economics. However, more recent developments of the theory argue that no economic activity can be assessed without factoring in shared understandings or meanings, symbols, and networks of inter-actor relationships (Swedberg & Granovetter, 1992). Issues of trust, cognitive biases, expectations, feelings,

schematas, and myths are emphasized by studies exploring economic action in variety of fields (Guillen et al. 2002). Thus, new institutionalists stress how individual action is embedded in cultural and organizational "fields" or "sectors" which shape the very concept of "self-interest" and "utility" of human action.

Studies of technology can benefit from this understanding of human action as a byproduct of social relations and symbolic exchanges. Technological practices are not the result of simple individual choice, but they are shaped by material exchanges and representations constructed in specific institutional settings. Following Warschauer, I argue that different institutional domains hold varying assumptions about the interest that motivates and legitimates acceptable uses of the technology. For example, libraries as institutions specializing in access to information may tend to privilege information retrieval applications while downplaying or even prohibiting the use of certain communication applications (e.g. Internet telephony). In an open access environment like the public libraries other social practices like literacy skills, and language employed in computer interfaces may persist as barriers of access for some citizens. Thus, I employ the concept of embeddedness to understand how access initiatives mesh with existing social institutions in particular historical and cultural settings that frame the adoption and social applications of new technologies.

2.1. Understanding non-profit action in cultural production

Employing the concept of social embeddedness of technology can also help us to understand the role of public access initiatives as organizations specialized in the production and distribution of information and communication services. This character has been commonly ignored by the literature because public access organizations commonly operate in the non-profit sphere of the knowledge economy. Discussions about the knowledge economy have focused in the role of for-profit enterprises (e.g. media

corporations) and public agencies under various perspectives (i.e. political economy of communications, cultural economy). However, few studies have interrogated the nature, contributions, and role of the non-profit sector of cultural industries to digital economies, and the impact of non-profit enterprises on the development of communication systems that support and enable access to communication services and products (Sandvig, 2004; 2006). The growing importance of individually-based, cooperative, non-market mechanisms to produce and exchange information and culture through digital networks has raised questions about the impacts of new forms of "social production" surrounding digital environments (Benkler, 2006). Answering these questions demands a deeper understanding of the organizational dimension that enables such forms of social production. From this perspective, I question the relationship between organizational characteristics of public access programs (e.g. organizational structure, institutional partnerships, funding sources), their services (e.g. program offerings), and their organizational ties to other institutions.

Another factor hindering the study of non-profit enterprises in the production and distribution of culture is the sometimes blurred division between private non-profit work, private for-profit activities, and the public sector's actions in the field (DiMaggio, 1987). Difficulties in discerning the nature of non-profit action stem from: 1) dichotomous conceptions of the social that oppose public initiative to private action, such as public education versus private training programs, and 2) the nature of sponsorship received by non-profits such as government entities or private companies (p.201). In developing their work, private non-profit access groups such as community technology centers and free-nets typically rely on grants and in-kind contributions from firms and governmental entities. Public sponsorship is typically granted to services with public appeal or educational utility such as libraries and job training institutions while private support

prevails in for-profit segments of the cultural industry including music recording, television, and film. Non-profits in cultural production also exhibit a greater heterogeneity of goals and ambiguity of objectives reflective of broader social agendas and needs, muddying the understanding of the nature of benefits and externalities yielded by non-profit action (DiMaggio, p.216). Assessing the implications of these issues in matters of public access requires an examination of the organizational structure of these programs, and their ties with other stakeholders in the field (i.e. the state, suppliers, broadband providers, social organizations). Thus, the concept of institutional embeddedness of access can help us to identify how public access initiatives support and enable other economic and social institutions and activities.

2.2. Emergence, reproduction and change of organizations

There are other benefits associated with the use of an institutional approach to the study of the configuration of ICT access. New institutional sociologists have been occupied for a long time in debates about "institutional isomorphism" or how organizational forms develop, and their implications for social life (DiMaggio & Powell, 1991). In exploring questions about the emergence, structuration and transformation of institutions, new institutional analysts emphasize the importance of developing a historical view of different stages of the institutionalization processes. Culture and ideational factors are also very relevant for proponents of this theory who regard institutionalization as a "cognitive process" through which "norms, values and taken-for-granted rules enter social life" (p.14). Such approaches can enhance our understanding of the process by which certain models of ICT service provision emerge and prosper while others are dismissed.

Situating institutions in social context starts by understanding organizations' form, trajectory, position and ties in relation to particular "organizational field." A field is

the set of key suppliers, resources, consumers, regulatory agencies and other organizations that are involved in the production of similar activities, products and services (DiMaggio & Powell, 1991, p.64). Institutional forms are bound to the history of their field, and to shared understandings forged in the interactions of professionals and other agents of the field. For instance, in his study of art museums in the U.S., DiMaggio (1991) explains the prevalence of the organizational form of art museums as repositories and collectors of art over others alternative forms such as museums as educational institutions, through the historical action of professional organizations and philanthropic foundations that came to rule key aspects of the museum's form and function by the end of the 1800 century. The institutionalization process continued through the spread of legitimate activities and interpretations about mission, publics, and strategies of control and production of museum procedures, enabling ritualized, routinized and taken-for-granted action within organizations and the field of art. Professionalization, or the action of a dedicated mass of 'experts,' professional associations, and professional elites around museum activities, mark the maturity of field. I find this analytical approach insightful, reflecting on how public and private initiatives have overlapped in the creation of organizations and institutions specialized in providing public access to ICT services. One of the tasks of this dissertation is to trace the historical development of the field of public access to new technology in Austin, Texas, an American technopolis, and to examine how larger national trends are reflected and particularized by local actors.

Although DiMaggio and Powell's analytical strategy illuminates the study of the emergence and reproduction of institutional dynamics, it falls short in accounting for the failure of particular institutional forms, and in explaining how power struggles shape these processes. The authors' emphasis on cognitive processes, rituals, taken-for-granted and routinized actions as driving forces of institutionalization downplays issues of actors'

self-interest behind organizational dynamics. As Freidland and Alford (1991) assert, institutional logics are "sets of material practices and symbolic constructions" that constitute organizing principles of action from which individuals choose. These logics are "symbolically grounded, organizationally structured, politically defined and technically and materially constrained" (p.249). Powell and DiMaggio have acknowledged the difficulties they encounter in integrating micro- and macro-level analyses of organizations, calling for a theory of "practical action" that considers material practices and cognitive aspects of institutionalization as well as the "pre-conscious," routine and taken-for-granted character of individual behavior (1991, p. 22). I propose to employ Pierre Bourdieu's theory of practice as an integrative framework for the analysis of organizations that operate in the field of public access to ICT. The main goal of this dissertation is to assess the implications of regulatory shifts for changing notions of public interest, as reflected by the action of public access organizations as they define their rationale, services, programs, and targeting of users. I employ Bourdieu's conceptual tools to explore how policy and non-profit action interplay in the process of shaping access initiatives. The following section discusses Bourdieu's categorical variables and how they apply to the study of social practice and institutions specialized in access to ICT.

3. INTRODUCING BOURDIEU'S ANALYTICAL CATEGORIES

Bourdieu's extensive oeuvre is recognized as one of the major contemporary social science endeavors attempting an explanation of the constitutive processes of social practices (Calhoun, 2003; Wacquant, 1993). In his theory of practice (1980, 1993), Bourdieu challenges long-held assumptions of the social sciences that postulated the dichotomy between agency and structure based on irreconcilable divisions between subjectivist and objectivist perspectives. Instead of analyzing reality based on these "false

antinomies," Bourdieu (1988) proposes to develop a "relational view" that recognizes the dialectic way in which structure and agency interact in the production of social practice.[6] His studies about the production of social practice cut across many empirical and theoretical domains such as education, labor and economic change, language, the arts, the academia and sciences. Formulated as grounded theory, Bourdieu's analytical framework offers epistemological and methodological advantages for the study of social practices around technology, and their implications for social life. Drawing on this tradition, Jorge Gonzalez (2003) calls for the study of the technological practice or "cybercultur@" through the description, analysis and explanation of relational processes that mediate cognitive, symbolic and material dimensions of social life in a world increasingly mediated by ICT. As Gonzalez argues, technology is the result of asymmetrical socio-historical forces with the potential to alter existing systems of representation, reinforcing the stratified distribution of cognitive dispositions yielded by them. In recent years, researchers in the U.S. have started to use Bourdieu's propositions to think about the relation between uses of technology and social inequalities (Fuentes-Bautista et al., 2005; Kvasny, 2006; Rojas et al., 2003). This project builds on these contributions to devise a framework to understand how the social practice of providers of public access for ICT, and its implication for social equity issues.

According to Bourdieu (1989), social life is made of material and phenomenological realities related through processes of correspondence (reproduction) or disjunction (transformation) of socio-cultural or economic dynamics. He accounts for this double-constituted reality by identifying and observing the point at which material and

[6] Although contemporary social philosopher Anthony Giddens has introduced similar propositions equally contributing to the advance of the social inquiry in the twentieth century, one main trait differentiating his work from Bourdieu's *oeuvre* is that the latter can be treated as *grounded theory*, since it departed from, and was geared to return to empirical research. Bourdieu's theory of praxis develops particular epistemological and methodological propositions employed in the analysis of social action in diverse fields (education, the arts, religion, economy and markets, etc).

subjective-mental systems converge or diverge. It is precisely this relational perspective which I find useful to avoid the false aporia between agency of providers of public ICT access (e.g. organizational structure and routines, mission, programmatic offerings, and acceptable use policies) and the socio-structural processes governing them (e.g. regulation, economics, class).

Like Weber and Marx, Bourdieu's vision of the social world is fundamentally antagonistic. The dynamic behind actions displayed by agents is one characterized by struggle. This eminently critical conception of society refocuses attention on power and the structures of privileges governing every society (Bourdieu, 1984). However, Bourdieu goes beyond structural materialism focusing on the dialectical interplay between material power and symbolic power in the process of social formations. Symbolic power is a key category in Bourdieu's work. It refers to the accumulation of recognition, prestige, status and authority under particular cultural conditions that provides legitimacy for the existence of imbalances or changes in the material plane. Symbolic power is fundamental to the process of reproduction of the social order and it is typically manifested as symbolic violence, or the imposition of formal or informal rules on social behavior. Institutions, as producers and organizers of the existing social order, play an important role in the creation, preservation and distribution of complex social forms. Access organizations are holders of symbolic power over technological innovations made available to the public. They have the ability to shape social applications, identify intended users and frame acceptable uses of the technology.

In Bourdieu's view, agents –not subjects, actors or players– are the builders of the uneven system of social relations. Agents can refer to "individuals, groups or institutions that execute actions in different fields" (Bourdieu, 2005, p.192). Their relations and interactions in material and symbolic spaces structure the uneven topography of the social

world. Such a critical perspective is very valuable to question normalized views of computing access programs as neutral spaces evacuated from issues of power. This vision also coincides with Dutton's perspective of tele-access as a malleable category contingent on the interplay of power dynamics between agents configuring access. Following the same line of thought, this research argues that material and symbolic power providers of access can reproduce or transform existing social, economic and cultural hierarchies.

Bourdieu synthesizes the relation between the material and phenomenological world in the reproduction or transformation of social practice through the categories of habitus, capital and field. Warning us against the fragmentary use of his ideas, he emphasizes that the explanatory power of his theory resides in the relations established between all the proposed categories (1989). Thus, this study applies all three concepts in the analysis of social practices surrounding the design and implementation of public computing networks.

3.1. Habitus

Bourdieu defines habitus as a set of "durable, transposable dispositions" learned through social interactions and geared towards social action (1977, p.72). In his view, human action is not always the expression of purposive, conscious and rational decisions. Rather, it frequently responds to habitual, unconscious, patterned actions learned by repetition and long exposure to social conditions. In this sense, habitus can be understood as "the practical sense" that guides our actions and that is developed through multiple social experiences. In Bourdieu's terms, the study of habitus can reveal both "capacities and propensities" to perform certain actions over others (1998). This set of dispositions is expressed in thoughts, ideas and belief systems, as well as in traits embodied in the agents. They act as the filters of our experiences affecting the way we perceive, judge and interact with reality.

Habitus is closely associated with the notion of trajectory. Bourdieu emphasizes that dispositions towards certain actions are acquired by extended exposure to specific social positions occupied by individuals in different social fields. Thus, habitus reflects both agents' history and his or her position in the social system or social group (e.g. class/income, gender, ethnicity, education). For instance, the similarities of dispositions and practices of members of the same social class would result in a particular class habitus. Habitus is ingrained in a sense of distinction built upon common practices and shared experiences along lines of social divisions (Bourdieu, 1984).

Habitus has a double character as a "product of the social structure and generator of the social practice" (Bourdieu 2005, p. 247). Discourse and language can provide a good example of how this process operates. According to Bourdieu (1977), discourse is a social practice in which language is used to interpret, categorize, and negotiate meanings. Our habitus, as reflected by particular acquired uses of the language through our participation in different fields such as education or in a counter-culture group can also lead us to challenge and reinterpret social reality assigning new meanings of our social experience. The end result would be a change of the discourse, and thus of the social practice. This last aspect is emphasized by readers and interpreters of Bourdieu who point out that the concept of habitus should not be interpreted as pre-determined action (Calhoun, 2003; Wacquant, 1993). Changes do occur by conscious, strategic action. Strategic thinking and action is achieved through reflexivity as manifested by awareness of one's position in a given social field. Multiple social experiences provide the critical distance demanded to grow through a reflexive process.

Powell and DiMaggio consider habitus as a valuable and instrumental category for the analysis of the role of institutions in the reproduction of social life. Institutions are inseparable from the social generation and distribution of dispositions (1991, p.26).

Although the concept of habitus is commonly associated with individual agency, institutions or firms also show dispositions displayed as distinct patterned actions performed in a given area of social life. For instance, real estate agencies act within housing markets following regulations and business practices that distinguish them from other types of firms that operate in the same field of housing such as contractors and builders of dwellings (Bourdieu, 2005).

A few studies have employed the concept of habitus to conceptualize the relation between differential uses of the technology and social inequalities. Rojas et al. define techno-dispositions as "the social practices, perceptions and attitudes" around technology as reflected by "technical education, awareness of technology, desire for information, job requirements, social relations, community interaction and geographic location" (2003, p.115). Examining why families in disadvantaged communities do not have, do not use or do not seek access to ICT, these researchers found that everyday life practices of working-class families reproduce a demotivating class habitus that acts as a barrier to the development of proactive techno-dispositions among members of these families. Some of the parents perceived the technology to be for the "rich and educated" and not for "minority consumers" like themselves (p.122). Meanwhile, gender and ethnic identity explained negative techno-dispositions among African American and Latino teens.

Other studies have found that techno-dispositions developed around certain occupations, jobs or technology training experiences reinforce deskilling rather than empowering practices through ICT use (Fuentes-Bautista et al., 2005; Kvasny, 2006; Tufekcioglu, 2003). In such cases, training programs behind public access initiatives further reinforce social hierarchies rather than promoting social mobility. Examining discourses surrounding a community technology initiative in an urban, working-class neighborhood in Atlanta, Kvasny (2006) found that both local participants and authorities

adopted a narrow perspective on ICT which focus on basic computer skills for blue collar jobs. The author underscores that the agents' class habitus was translated into perceptions of ICT as production-oriented tools totally ignoring or disregarding computer networking practices associated to more advanced or better paid job positions. Drawing on previous studies, this project examines how institutional dispositions, occupational trajectory of staff and volunteers and the leadership of public access programs shape access to ICT.

3.2. Capital

Capital is probably one of the best known and most employed conceptual artifacts of Bourdieu's thinking. Capital refers to any resource employed in the social arena to appropriate benefits derived from the participation in such arena. The metaphor is chosen to reinforce the notion of accumulation of assets that have the potential to alter one's social position and trajectory (Bourdieu, 2005). Capitals can encompass a broad range of material and intangible social aspects such as economic, cultural, symbolic and social assets acquired by agents through interaction in particular fields. Economic capital refers to economic or financial power achieved through accumulation of money, assets and material goods.

Cultural capital denotes cultural resources that constitute the base of culturally-valued taste and individuals' consumption patterns (Bourdieu, 1986, p.243). Cultural capital goes well beyond formal education to include all kinds of popular cultural expressions. Cultural capital can be thought as "informational capital" used by agent in their everyday life to gain access to different social spaces (education, religious groups, fan clubs) (Bourdieu & Wacquant, 1992, p.119). Low literacy skills and language proficiency is a primary example of how cultural capital mediates access to new technology. Studies have found that significant differences in ICT practices among different generations of Latino users are in fact associated with command of the English

language or the perception of Internet as an "English only" medium (Rojas et al, 2003; Fuentes-Bautista et al, 2005). It is important to interrogate the role of public access providers in these types of constructions of ICT, in particular, their impact on the process of adoption and use of the technology among the disadvantaged.

Cultural capital should not be confused with symbolic capital or symbolic power. As previously discussed, symbolic capital is related to notions of prestige, legitimacy and authority established through social interactions. Symbolic power acts as the overarching exchange system of other capitals adding or subtracting value to them. It is defined by the social space of each society or group (Bourdieu & Wacquant, 1992). For instance, in collectivist type of society, belonging to or having a leadership role in a union or cooperative organization will tend to draw prestige and social acceptance. However, the same role does not command the same amount of respect in capitalist, individually-oriented societies.

As Kvasny and Keil (2006) argue, symbolic capital is a powerful construct to theorize why certain representations of ICT are more desirable for some social groups while other users find them unattractive or even objectionable. For instance, Rojas et al (2003) found that in the particular milieu of African American and Latino teens, ICT use was sometimes associated with pink collar jobs so that it was not considered a desirable skill among young males. As some authors have suggested, public access initiatives play an important role as *cultural intermediaries* or articulators of symbolic power in the knowledge society (Kvasny, 2006; Myles, 2004). Bourdieu (1992) coined the term cultural intermediary to refer to occupational groupings who mediate the relationship between producers and consumers of "symbolic goods and services." In the French context, Bourdieu describes cultural intermediaries as a fraction within the overall socially dominant new middle class. Their lifestyle is marked by a mixture of popular

consumer culture and high cultural aesthetics, and this heterogeneity in consumption habits distinguishes them from other groupings in the new middle class as a whole.

Arguably, in the context of the U.S. economy, technologists and workers of the knowledge economy have emerged as a new class: the "creative class" (Florida, 2002). Technologists, scientists, engineers, artists, musicians, and designers are all part of the cadre of knowledge-based professionals known as creative workers. Their wages and salaries accrue as much as the manufacturing and service sectors combined, and their lifestyles are based on modes and dynamics characteristics of flexible production (p.xiv). The rise of the creative class has been associated with growing inequalities. Richard Florida's work finds evidence that wage inequalities are higher in the creative epicenters of the U.S. economy like Austin, Texas. However, such differences are justified and cherished in the context of the dominant neo-liberal ideology: "Not only creative workers earn much more, on average, than the large numbers of people who do low-end service work or rote manufacturing, they also get to do more enjoyable work and they contribute more by adding creative value" (p. xv). Questions emerge as to how technology groups understand their social position and fulfill their role as cultural intermediaries of public ICT access and services. Also, what goals, values, and norms do they pursue, and what cognitive dispositions do they reproduce and inculcate?

An extensive body of literature has also discussed the importance of social networks in shaping ICT use. In Bourdieu's terms, social capital goes beyond the simple concept of the social network or number of social connections one has. Rather, it refers to "the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition" (Bourdieu & Wacquant, 1992, p.119). Social capital translates into information, support, guidance, and increased means to mobilize an

agent's resources. An example of how social capital can enable access is seen in the case of people who lacking ICT skills still "use" computers, go online and send emails asking friend to do it for them (Fuentes-Bautista et al., 2005). Their techno-disposition and practices around technology incorporate their social world as an enabler mechanism of access. Community technology centers can be regarded in the same way as repositories of technological knowledge and skills employed by citizens and organizations when they encounter diverse problems to access and use ICT.

Rojas et al. have proposed to understand ICT use as a form of capital itself. In their words, techno-capital refers to "certain competencies and resources [employed by individuals] to negotiate within the techno-field" (2003, p.115). These competencies or skills are formed in the interplay with other forms of capital (cultural, economic, social and symbolic). Technology has also been described as a "vector" or social force with directionality and weight that operates with other social forces such as political power and social movements in shaping the trajectory of individuals, groups and organizations in various fields (Gonzalez, 2003). Bourdieu (2005) has called attention to the importance of 'techno-capital' for the trajectory of firms and organizations in the economic field as they define the competitive advantage in the field of production. However, he argues, "technological capital is only effective if it is associated with other capitals" (p.203). In other words, the ability to use technology for transformation and improvement of the organization's position in the market will depend on other types of assets or capital. Likewise, the ability of public access providers to use and promote the use of the technology is related to economic, cultural and social capital.

3.3. Field

Bourdieu regards society as a web of webs constituted through distinct, patterned interactions around specific social contexts or fields. Thus, thinking in terms of fields

helps us to focus on social relations, interactions and the nature of the objective social structures that govern agents' actions in particular social contexts. For instance, distinct social practices and interactions distinguish our actions in the fields of education, religion or in different occupational fields.

Defined in these terms, Bourdieu's concept of field is closely related to the notion, proposed by new institutional sociology, of organizational fields as set of specialized activities. However, in Bourdieu's terms, a field is above all an arena of struggle. Agents' positions in any particular social space or field, is determined by their patterns of consumption or acquisition of resources or capitals. Thus, competition for the accumulation of various forms of capital is the basis of the system of hierarchies that characterizes any field. Although the game metaphor has been applied to explain the notion of field (Calhoun, 2003), Bourdieu warns us that unlike the game, a field is not a product of objective norms and rules deliberated created by agents (Bourdieu & Wacquant, 1992). Rather, a field is created through "regularities" in the exchange of resources in a process characterized by tensions and struggle (p.99). In this sense, social fields can be thought as a 'field of forces" where capitals represent the strength accumulated by each agent, determining his or her social position. Gonzalez referred to these relations as "cultural fronts" (1997, 2000). The term "fronts" is employed with a double meaning: as a porous and mobile boundary zone between the cultures of different classes and social groups; and as battle fronts or arenas of cultural struggles between contestants with unequal resources and conditions. I contend that the emergence of the field of public access, and its porous boundaries with other fields is potentially an important arena for the daily construction of the meaning of social life in the information society.

Bourdieu proposes to understand organizations as sub-fields where diverse agents interact through uneven power dynamics (205, p.198). Social agents exhibit different occupational trajectories and individual habitus. Bourdieu's analysis of organizations focuses on the social agents that enact the process of social production, and on their relationships with other organizations or individuals. For example, when he addresses the structuration of the real estate market in France, he focuses on the vision of builders, architects, marketers, and buyers in the real estate market, the home as a status symbol, agents' occupational trajectories, social position, and notions of the place. In examining organizations such as cement production firms or administrative state units, he emphasizes the action of agents within these institutions. His approach yields valuable insights about the construction of meaning around social processes of economic production.

Bourdieu devoted great attention to the study of the State's action as an organizer of forces in any social field. In his view, the State emerged from a process of concentration and control of capitals in the hands of state bureaucracies endowed with the control of symbolic power (Bourdieu,1998). As an organizer of hegemonic forces, the State acts through law, policy and enforcement as an arbiter of social hierarchy legitimizing the action of certain agents while excluding others, and promoting the development of certain fields through funding programs. The State can use its symbolic power to naturalize the social order or to call for change. In the realm of symbolic production, "state bureaucracies and their representatives are great producers of social problems" that many times social science ratifies as "sociological problems" (1998, p.38).

Technology itself can also mobilize forces that redraw the boundaries of the field of access. To illustrate the point, Bourdieu precisely uses the example of digital

technologies that facilitates the convergence of computing, telecommunication and media industries in the last decades. Convergence of communication systems, he argues, is better understood as a collision or "competition in the new space of relationships that is forming" between previously separated industries or fields (2005, p.203). Just as convergence transformed old telcos into video providers, public broadband access is testing the institutional boundaries of some providers of ICT access such as libraries which now face to the increasing use of online video streaming applications. This project interrogates the impact of technological convergence in the shaping of the field of public access programs. The goal is to explore the process by which agents produce and reproduce the field of public access to ICT accounting for the continuities and discontinuities of different models of public access.

4. ANALYTICAL FRAMEWORK FOR THE STUDY OF ACCESS CULTURES

This project critically analyzes the status of public access to ICT in the post-convergence era through the examination of the orientation, design and implementation of public access models crafted under divergent policy approaches aimed at enabling people's access to new media. I want to assess how, in providing public access, these various models complement or collide with each other, shaping the contours and new interpretations of public access in a convergent media environment. I am particularly concerned with the way in which public access initiatives mediate people's ability to participate in the information society.

Traditionally, studies of public access to ICT have focused on the impact of these initiatives on issues of digital inequalities, community and economic development. They rarely question the rationale, orientation, and structure of programs and services made available to the public; neither do they draw connections between service offerings and practices with outcomes. More recent studies have interrogated the design and

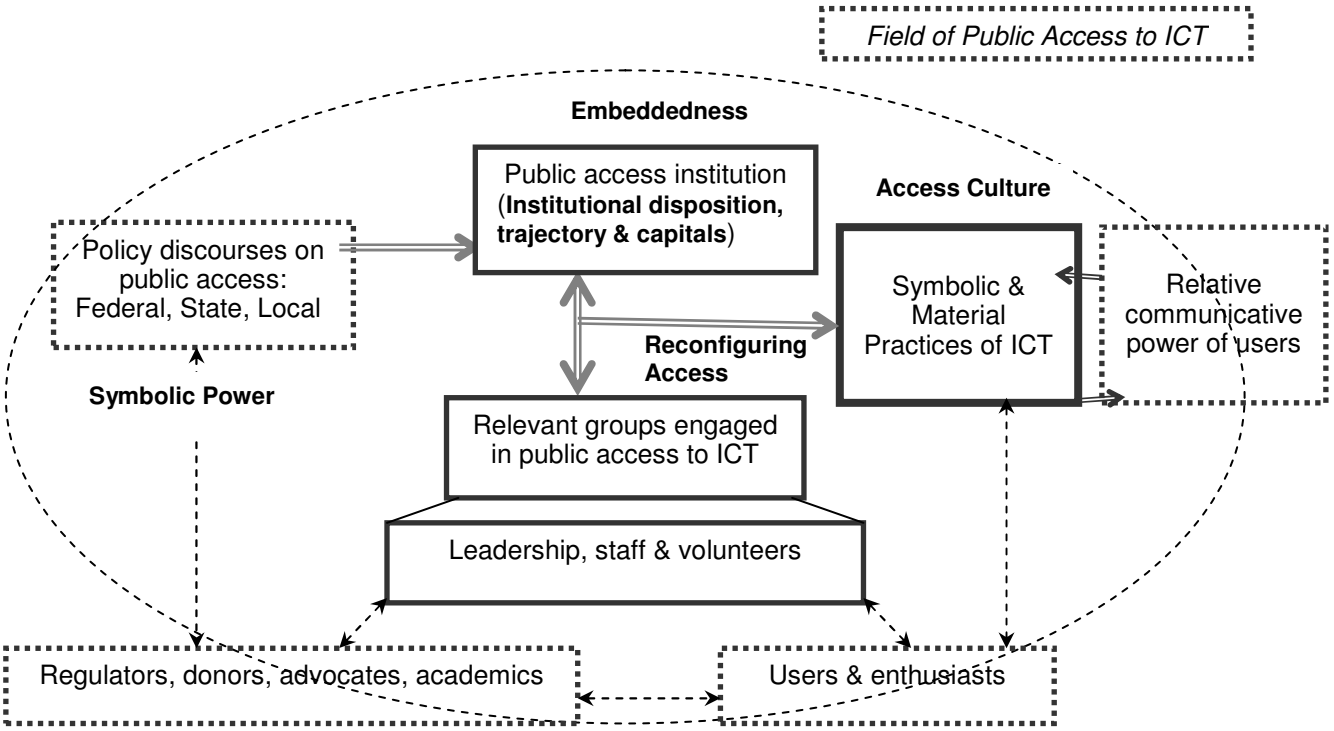
implementation of community technology programs (Strover et al, 2004) and public wireless networks (Sandvig, 2003; Fuentes-Bautista & Inagaki, 2006) shedding light on some of the external and internal factors that shape or constrain intended outcomes of these interventions. Such perspectives can provide policy makers and social scientists with better understandings of how to foster increasing citizens' participation in the digital era.

While acknowledging that institutional factors have a meaningful role in issues of digital inequalities, previous studies have not paid attention to how different notions of public access mediate outcomes, or how the nature of social institutions and agents involved in the initiatives relates to the orientation and structure of these program. Avoiding techno-centric and naturalized views of public access networks and programs, this project critically examines how public access is configured and reconfigured through the interactions of relevant groups operating under different institutional dynamics and policy scenarios. The goal is to assess the impacts of shifting policy approaches on issues of access to new technologies. The following sections introduce the conceptual model and theoretical constructs that guide my analysis.

4.1. Conceptual model and analytical constructs

Assuming a structural constructivist approach to the analysis of social practices surrounding the configuration of public access programs, the conceptual model guiding my research builds upon Dutton's model of tele-access (1999; Dutton et al, 2004) integrating the concept of social embeddedness of technology (Warschauer, 2003), and the conceptual categories of Bourdieu's theory of practice (1990, 2005). Figure 2 illustrates the relational dynamics and constructs proposed for this study. Each construct included in the analytical model is described below.

Figure 2: The field of public access to ICT.



i) The field of public ICT access

One of the ways in which we can understand and study public computing networks across different public institutions and spaces in the city is through the notion of field. I contend that public access to new technologies has emerged in the last four decades as a distinct social arena specializing in the redistribution of communicative power among citizens and institutions in an increasingly media dominated environment. First conceived as direct participation of citizens in cable access channels, and later developed under the form of community technology initiatives and dedicated spaces for ICT access at public institutions, the field of public access to new technologies was created through citizens and State's actions aimed at providing skills, expertise and opportunities for the full participation of individuals and communities in the information

society. The mission of these institutions was and still is to provide opportunities for information and knowledge acquisition, expression, and communication through the use of technology.

As any field, the field of public access should be understood as an arena of struggles. Different institutions, organizations and individuals engaged in the provision and use of public ICT networks fight for the appropriation of available resources for their specific purposes. This is the origin of the tensions between intended applications and services pushed by specific institutions such as public libraries, and the actual uses and demand for these services. The same tensions exist among organizations engaged in the provision of public access. Although these programs have developed through extensive partnership among a myriad of organizations, the process has resulted in a fragmentation or layering of public networking spaces accompanied by the concentration of "communicative power" in institutions with more social, economic and cultural capital, such as schools and libraries.

ii) Policy discourses on public access

A second central category for the analysis is policy discourses on access. Following Bourdieu's framework, I consider policy discourses as a government practice (at the federal, state or local level) of establishing normative and discursive directives for agents' strategic and non-strategic actions associated with the design, implementation and use of public computing networks. Policy discourses represent a particular sphere of symbolic power surrounding matters of ICT use arbitrating on a wide array of issues, from determining acceptable uses of the technology to designating authorized or desirable providers of these services. For instance, the digital divide appeared as a national social and political issue thanks to the initiative of the Clinton administration, which in 1993 publicized the divide in terms of connectivity with the National

Information Infrastructure (NII), a plan for a public-private partnership involving businesses, non-profits, communities and academia, to develop an information superhighway to benefit all Americans (Gustafson, 2006). State intervention to bridge the divide was called for, with the intension of providing high-speed ICT services in public institutions such as libraries, schools, and rural health care facilities. Its goals were to facilitate access to digital public information (e-government), to support the universalization of ICT services, and to foster innovation. Citizen groups expanded this original agenda to encompass multiple issues, from traditional literacy issues and career job development to community engagement and cyber-activism. Federal, state and local governments have also set the agenda for action through digital divide policies that provided prescriptions involving the active role of public access in efforts to bridge rising digital inequalities. As I shall discuss in Chapter Four, the digital divide debate added and important layer to pre-existing policy discourses on access impacting the trajectory of public access initiatives to new media.

Policy discourses on public wireless broadband can also illustrate how the sphere of policy discourses operates as a shaper of the field of ICT access. In its agenda for A New Generation of American Innovation, the White House (2004) identified the "opportunities" opened by wireless technologies making use of the unlicensed spectrum to offer broadband access to "consumers… in restaurants, airports, and other public places" (12). Going beyond traditional spaces for public access, government made a call to extend high-speed services to commercial venues as a way to support the universalization of broadband. The vision legitimized the action of commercial and non-profit organizations that in recent years have mobilized to offer these services pursuing no goal other than furthering the availability of the service through market mechanisms.

I also propose to understand symbolic power as the ability to frame particular understandings about an issue among competing discourses. The organization and packaging of discourses in light of competing stakeholders and policy agendas has been studied by authors across different disciplines through frame analysis (Goffman, 1974; Gamson & Modigliani, 1987; Pan & Kosicki, 1993; Reese, 2001). This theory of semantic construction has offered a variety of ways to conceptualize *frames*. However, a common denominator of these diverse conceptualizations underscores frames' cognitive character, as they not only reveal patterns of labeling through inclusion and exclusion of specific elements in texts or discourses, but also broader "interpretive schemata" (priorities, values, stereotypes, stances, and identities) borne and acted out by the creators of those texts or discourses (Goffman, 1974). It is precisely this emphasis on the creation, association, selection, and re-creation of meaning through policy frames what I find useful to study how the symbolic power of federal, state and local governments coincide or diverge in crafting different understandings on public access policies.

Nelson, Clawson, and Oxley (1997) conceptualize framing in policy analysis as "the process by which a source defines the essential problem underlying a particular social or political issue and outlines a set of considerations purportedly relevant to that issue" (p.222). As Entman (1993) suggests, frames define problems, diagnose causes, make moral judgments and suggest remedies for the issue at hand. These elements of selection and salience are crucial for the definition of policy frames. Focusing on elements of absence, selection and salience is a useful strategy to explore elements related to symbolic power of state action and discursive practices of other stakeholders.

iii) Access Cultures

Drawing on notions of institutionalization as a cognitive and symbolic process framing the organization of human life, I propose to understand the social practice of ICT

access providers as distinct cultures of access. I define *access cultures* as the assemblage of material supports, social practices and symbolic and cognitive processes constitutive of organizations specialized in ICT access that frame individuals' use and common understandings of the technology. My view of access cultures should not be confused with popular definitions of organizational culture. As Geertz suggests, institutions do not "produce culture", they are cultural forms. Concurrently, my understanding of culture goes beyond partial definitions of the construct that limit it only to routinized action, or schemata, or shared beliefs or norms. Cultural elements may be any of these components as performed by individuals with strategic or non-strategic aims (Bourdieu, 1990). Access cultures are articulators of the experience and utility that users find in electronic spaces, grounding the dynamics of the cyberspace in the socio-economic and cultural dynamics of the real-space and locales (Sassen, 2006, p. 347). These spaces, as an expression of existing social relations, are inflected with issues of power materialized in particular class, gender and ethnic relations.

I see in this spatial dimension of access important aspects to be explored by empirical research. Space of place still constitutes the prevailing arena of people's experience and cultural identity (Castells, 2002). Historically, public spaces served as bridges and communicative systems between communities and individuals. However, trends toward the privatization of public spaces, as seen in closed private shopping malls, coupled with the individualization of ICT services such as mobile telephony, may reinforce socio-spatial separatism. Public computing networks as interfaces between electronic communication and the space of place represent important material and cultural forms in the development of the new culture of the informational city.

The study of particular access cultures will be advanced through the examination of the programmatic offering, service practices, and socio-geographic location of access

sites. Programmatic offerings represent a prognosis and prescription for the problem of inequitable access and use of ICT. By examining the nature of the programs and services provided by public access initiatives, I derive their conceptualizations of public access. Program practices refer to acceptable use policies and customary activities performed at these sites. Socio-geographic location of the sites provides an idea of the target population and communities being served.

iv) Reconfiguring Access

I propose to understand the process of configuring access to ICT as the choices of providers like libraries, community centers, cyber-cafés, and other relevant groups regarding the design, implementation and use of public computing networks. Thus, I define reconfiguration of access as the wide range of strategic and non-strategic actions and choices displayed by agents (individuals, groups or institutions) in their encounters with the technology in a social context, or field, characterized by competition and unequal distribution of resources, that is, a structural context that can enable or constrain actions by agents. The importance of the process of configuration of access is that it is the expression of particular access cultures, potentially framing the actions of ICT users. Communicative power, or people's ability to freely interact and function in today's information society, is placed as a direct outcome of a given access culture. Although the analysis of impacts of the social mediating role of different access cultures goes beyond the scope of this study, evidence collected by this dissertation will be employed to identify and discuss areas and directions for future research.

v) Public access provider

This study defines public access providers as any institution or organization offering ICT services at places accessible to the general public. Place is a critical

dimension of this definition. As previously argued, independently of their institutional form, public access sites can be viewed as the material space serving as interface between virtual spaces and the space of place, potentially playing a decisive role in bridging existing gaps between communities and individuals online and off-line. Another important aspect is the institutional form of the access provider. The concrete dimension of the spatiality of public ICT programs is represented by the social institution enabling open access (library, community site, airport, cyber-café). Examining public access providers entails the study of their institutional dispositions and capitals.

(1) Institutional dispositions

One can observe a particular set of dispositions displayed by access providers according to their institutional trajectory and position. For instance, by common practice as well as by law, libraries have historically acted as depositories of knowledge and as distribution systems of public information, in particular government related information. Arguably, one might expect that this particular institutional disposition would be reflected in the configuration of networks and services that prime information retrieval applications reproducing the social norms of the institutions. Just as individuals develop particular techno-dispositions – that is, distinct inclinations to use the technology – one can also think of institutional techno-disposition or preferred uses and applications of ICT access crafted under particular institutional habitus and trajectory.

Institutional habitus bears significant implications for equity and fair use. For instance, studying Internet users at libraries, Lentz et al (2000) found that the authoritative role of the librarian, the filtering practices of online content (child protection practices), and the organization of the physical space designated for computers discourage the use of technology in these spaces by some minority and low-income users.

Institutional habitus may also affect the definition of target populations and identification of sources of support to ensure sustainability of these programs. Institutional dispositions will be examined through the following dimensions: (1) organizational structure, mission and goals of public access, (2) identification of target populations, and (3) origin of funding sources.

(2) Institutional capitals

In the case of public access programs, we can identify economic capital as material assets (acquired or donated) and funding from diverse sources. Donors and other sources of funding (federal, state and local agencies) play a crucial role in shaping access by prioritizing program goals and technology applications subject to funding. For instance, the federal government only funds public libraries that use filters to block indecent online content and child pornography.

As previously discussed, symbolic power refers to notions of prestige or authority which provide legitimacy and acceptance for social action. Cultural capital and symbolic capital are particularly important in the field of cultural production in which knowledge-based activities take place (Bourdieu, 1993). ICT training programs like other educational programs reproduce distinct values and patterns of cultural consumption. For instance, training programs dictate socially accepted uses of the technology presenting it as an educational or economic development tool. Providers can also appeal to popular discourses of the technology as life enhancing or as a symbol of the hip techno-culture. Such portrays can invite certain users while discouraging others.

Social-capital refers to the extent and nature of partnerships formed by public access initiatives. Many providers have grown through partnerships or networks of collaborations between CTC, libraries, social service programs, and academic

institutions. This social embeddedness is reflected in different degrees of social capital. Large networks of collaboration can potentially strengthen access by enhancing program offerings and technical expertise, attracting more users, facilitating access to new applications or online content.

Techno-capital is other dimension discussed in the study. Computing systems and skills are essentially knowledge-based tools with the capability to interact with other capitals increasing their potential value. Adoption or preference for certain platforms and software and their application in particular activities and programs denote the institutional expertise and dispositions toward the technology.

vi) Relevant groups engaged in public access to ICT

As shown in Figure 2, this study distinguishes between three sets of socially relevant groups in public access: agents directly engaged in the provision of the service, regulators and advocates of access, and users of these services. The analysis focuses on the role of staff, volunteers and leaders of the provider institution and examines how their particular dispositions and occupational trajectory impact the configuration of public access services and practices. For instance, staff and volunteers of public computing networks can hold different perceptions and expectations about target populations. Such constructions vary among different agents of a given organization. These representations justify their actions and the definition of program offerings.

Occupational trajectory of staff and volunteers is an important variable to understand the orientation of public ICT services. The literature highlights the preponderance of techies and technology enthusiasts in community technology initiatives from free-nets to public wireless broadband groups. However, as it will be explained in Chapter Five, in the last five years community technology centers have promoted the involvement of professionals and volunteers with social service and educational

backgrounds. Arguably, the occupational expertise of providers will inform their choices regarding the goals, design and implementation of public access programs. Agents can assume particular roles across different institutions. For instance, technology enthusiasts can participate as volunteers of public access initiatives and become advocates of these programs through professional associations and activist groups. This project considers these cases to the extent that such intersections occur or are important for the definition of public access programs.

5. CONCLUSION

This chapter has theorized the relationship between public policy as a structural force and the agency of groups and organizations that provide public access to ICT. The argument assumes technology is a social construct and an expression of existing power relations between diverse agents engaged in the adoption, provisioning and use of ICT. ICT is in reality a multi-layered category involving various applications (information, communication, transactions, and access to other technological resources) and skills that enable different social uses and functionalities. Thus, "access to ICT" is not an unequivocal action and the product of individual choice but rather it must to be regarded as the social process of configuring social choices and uses of the technology.

I have argued that the vision of the technology as a social system is better understood and examined through the analysis of its institutional form, assessing how particular institutional formations frame symbolic and material practices surrounding new technologies. Institutions are social constructs, and the result of social cognitive processes through which values, explicit rules and taken-for-granted norms enter social life. Policy is identified as a particular sphere of symbolic power able to mobilize and shift resources, understandings, and cognitive dispositions inculcated by organizations specializing in access to new technology. In other words, policy discourses establish

frames for the actions of public access initiatives, arbitrating on a wide array of issues. Access organizations also derive symbolic power from regulation that designates them as primary intermediaries of ICT services for the general public.

ICT access initiatives cannot be assumed as newly developed, monolithic entities. Historical views of the development of the field, its institutionalization and professionalization process are necessary to understand the diffusion, regularization and specialization of distinct forms of public ICT access provisioning. The task also demands a theory of action that helps us to understand how structural factors interplay with the agency of access organizations and groups in shaping ICT use. I introduce the concept of access culture as an analytical and methodological category for the study of these practices, and the social mediation role they fulfill. I define access culture as the assemblage of material supports, social practices and symbolic and cognitive processes constitutive of organizations specializing in ICT access that frame individuals' use and common understandings of the technology. Occupational trajectory of leadership, staff and volunteer base, habitus of relevant groups engaged in access, and various forms of capital held by these institutions are important factors in the configuration of distinct access cultures. The present project contributes to the literature of communication policy, technology studies and digital inequalities by developing a framework for the evaluation of the mutual constitutive process linking policy, institutional and citizens' actions in targeting digital gaps. The research seeks to reveal how local powers interpret and negotiate policy options, dismissing some while giving others prominence as potential solutions for problems of access. It explores the evolution of the notion of public access and how it has transitioned to digital media scenarios. The next chapter details the methodological approach followed by this study that empirically tests the implication of policy shifts on changing notions of public access to new media.

Chapter 3: Methodology

This dissertation assesses the impact of regulatory shifts dealing with technological convergence on organizational practices, design, implementation and application of local public Internet access initiatives. The study required the formulation of two separate but closely related sets of research questions and methodological designs. The initial phase of the study critically analyzed the evolution of policy on public access to ICT in order to identify the prevalent frames in policy discourses on public access, and the turning points and most significant changes in these regulatory frameworks. Thus, the first part of the chapter describes the guiding questions, research design, sampling and data collection techniques and methods employed in the longitudinal analysis of public access regulation between 1995 and 2005 at three levels: national regulation, state policy (Texas) and local government initiatives (City of Austin). The second phase of this dissertation delved into the institutional analysis of public Internet initiatives in the city of Austin, Texas against the backdrop of the development of the field of public access to ICT in the U.S. Subsequently, the second part of the chapter lays out the comparative case-study design employed to construct the cross-sectional analysis of public access initiatives by 2004-2005, detailing the main questions addressed by the research, criteria for the selection of the cases, data collection tools and analytical methods. The design was geared to looking at how particular access cultures as represented by the practices of different public access providers, configure ICT service for the public.

Following Bourdieu's structural constructivist epistemology, this research places special emphasis on how symbols and cognitive schemes (i.e. policy and stakeholders' discourses on public access) create reality through the generation of systems of representation which guided the actions of participants of this study. Such a process also

demands the recognition of the generative and situated character of both the object of study and my research practice (Bourdieu & Wacquant, 1992). Therefore, in the final section of this chapter I discuss issues of reflexivity and power that permeate my overall research effort, identifying the limitations and blind spots of the present study. A constructivist epistemology should not be construed as epistemological nihilism. On the contrary, it demands rigorous, multi-layered observations attested by data triangulation, and assessed through multiple methods. In achieving this goal, Bourdieu and Wacquant (1992) suggests three fundamental research strategies for studying social reality: 1) comparing measures and results yielded by multiple methods of observation; 2) the interpretation and critique of symbols, meaning and schemata surrounding social phenomena; and 3) the examination of the genealogy of concepts and trajectories of action shaping the outcomes. This project follows these recommendations in the design of a 'thick' account about how public access initiatives reconfigure access to new technologies in a shifting regulatory scenario.

1. POLICY ANALYSIS

1.1. Guiding questions and research approach

The first phase of the research addressed the following questions:

1. How has public access to ICT been framed by public policy facilitating the transition toward convergent media environments?

   a. How has federal policy defined public access to ICT?

   b. How have state and local powers shaped these understandings?

The literature on communication policy and regulation widely recognizes the National Information Infrastructure (NII) initiative of 1993 as the first executive effort to harness long standing trends toward convergence in communication technologies,

industry and financial structures (Kahin, 1995). The changes set in motion by these efforts served as a backdrop and as a source for debates surrounding the passage of the U.S. Telecommunications Act of 1996. The statute was the first comprehensive and affirmative attempt to make regulation for the digital era, fostering investment and development of interconnected electronic networks capable of delivering information and communication services (Aufderheide, 1999; Streeter, 1996). The 1996 Act fundamentally redrew the map of U.S. telecommunication and redefined traditional understandings of public interests in communication policy and law. I use these two events as points of departure to examine policy directives justifying state action to grant, support, or to foster people's access to advanced telecommunication services. By policy directives I mean documents that provide guidelines to programs implemented by public agencies at the federal, state and local level in support of public ICT access. In assessing the framing of policy discourses on public ICT access, I focused on: legal frameworks; legislation and principles that justify these policy interventions; goals of state involvement; places and institutions designated for access; definitions of the public; and intended social functions of the technology. I define public access to ICT as the ability of the public to connect and use infrastructure, information and communication services delivered by electronic networks. These operational definitions provided a toolkit to perform a framing analysis of policy documents.

1.2. Research design

The analysis starts by locating the issue of public access to information and communication systems in the broader context of the history of public interest policy in communication regulation. A socio-historical perspective helps to identify connections and divergences between different public access traditions. The endeavor was not an easy task. Just as different regimes regulated the press, broadcasting, cable, and

telecommunication services for decades, different strands of scholarship examining the public's right to access communication systems have evolved separately and are scattered through different bodies of literature. By surveying this literature, I attempt to draw an overall picture tracing the roots and trajectories of distinct policy discourses on access in their transition to current formulations of public access to ICT. The second part of the analysis traces the evolution of the definition of public access to ICT in the last decade by looking at the frames employed to define public ICT access in documents produced by agencies that have supported Internet access initiatives at the federal, state and local level.

1.3. Sampling, data collection and analytical methods

At the federal level, the National Telecommunications and Information Administration (NTIA), a division of the U.S. Department of Commerce, has served as the principal executor of telecommunications and information policy, including initiatives to spread access to ICT services. NTIA was the agency that coordinated programs and guidelines introduced by the NII in 1993 to enhance public access to new technologies. Through its Technology Opportunities Program (TOP), NTIA promoted the widespread availability and use of ICT conceding grants for model projects in the public and non-profit sectors between 1994 and 2004. I looked at TOP's descriptions of main funding areas for these ten years to trace the definition of public ICT access applied by the organization. Between 1995 and 2004, NTIA also released six reports examining the use of computers, the Internet, and other information technology tools by the American public[7]. They provided important terms of references for the definition of policy interventions to extend ICT access. Since 2003, following White House directives, NTIA has developed a market-driven approach to the promotion of broadband access through

[7] Reports available at http://www.ntia.doc.gov/reports/anol/index.html

the unlicensed spectrum. I examined the White House strategic vision for broadband deployment, the NTIA's Spectrum Policy Reform Plan and Spectrum Policy Reports (I & II) to derive the definition of public access devised in the era of wireless broadband. In total, I examined 25 documents to identify the evolution of the concept of public ICT access at the federal level.

My analysis of Texas' state policy on public access departed from the passage of the House Bill 2128 in 1995 (later renamed the Public Utility Regulatory Act or PURA), a major overhaul bill that advanced deregulation of the telecommunication business in the state. The statute established a new agency, the Telecommunications Infrastructure Fund (TIF), to support the deployment of advanced telecommunications infrastructure in the new competitive environment. TIF was expected to serve "as a catalyst and supporter of public access to an advanced communication technology network" giving priority to rural and underserved areas (TIF, 1997, p.4). Through its Community Network program (CN), the agency sought to enhance ICT access by funding projects that extended these services beyond traditional recipients of TIF grants (i.e. schools and libraries and healthcare facilities). I employed four TIF annual reports, and the calls for proposal of three rounds of the Community Network Program as primary sources for analyzing the evolution of state policy on public ICT access. In the summer of 2003, I also carried out four semi-structured interviews with TIF officers to clarify the criteria of interpretation of the guidelines established by different rounds of CN grants.

Analysis of local policy directives on public ICT access relied on three main sources of documents: 1) contracts between the City of Austin and Austin Free-Net for the delivery of public access services at City facilities (i.e. public libraries); 2) call for proposals of five rounds (2001-2005) of grants of the local Technology Opportunities Program (GTOPs) funded by the city since 2001; and 3) the current contract between the

City of Austin and the Austin Wireless City Project for the provisioning of wireless broadband services at Austin public libraries. Austin Free-Net and the Austin Wireless City Project are non-profit organizations that specialize in the provisioning of public ICT access services via wired and wireless platforms. As I shall explain below, they have been transformed in the two most important citywide public ICT access initiatives, enabling Internet services beyond libraries in places such as community centers, homeless and immigrant shelters, coffee shops and restaurants. The analysis of local policy on access was supplemented with four semi-structured interviews with representatives of the City of Austin, the Office of Telecommunications & Regulatory Affairs, and the City library system.

i) Frame analysis

I employ frame analysis to examine the conceptualization of public access in policy documents, and in the discourses of stakeholders about the issue. In the case of policymaking on ICT, it is not difficult to see how notions of selection and salience apply to the discourses that diverse interpretations on technology, power and social order bring to the table. Framing is particularly relevant for this study as it provides, among other analytical tools, "an organizing schema for policy making or implementing an agency's organizational mission" (Pan & Kosicki, 2001, citing Moore, 1993). Framing analysis is helpful to this research in that it provides three essential elements: 1) analytical tools to determine the existence of competing discourses about the ICTs among different policy traditions justifying support for public ICT initiatives; 2) an interpretive framework to identify possible exercises of power in the field of public access by justifying particular modes of action, designating main actors, and by defining benefits, intended users and social functions of the technology.; and 3) a theoretical base to compare and contrast the outcomes of policymaking processes at the national, state and local levels. This study

explores the following regulatory frames on public access: statute or principle that justify policy interventions; goals of state involvement in these initiatives; places and institutions designated for public ICT access; definitions of the public, and intended social functions of the technology.

2. INSTITUTIONAL ANALYSIS

2.1. Guiding questions, operational definitions and research approach

The second phase of the research addressed the following questions and sub-questions:

2. What are the main characteristics of the field of public access to ICTs in an American technopolis?

a. What are the main justifications for providers' actions and engagement in the supply of public ICT services in Austin, Texas?

b. How does the embeddedness of organizations shape different access cultures?

b.1. What are the institutional dispositions of public ICT access providers?

b.2. What is the relation between occupational trajectories of agents engaged in access initiatives and the formation of distinct access cultures?

3. How has public access to wireless broadband been conceptualized by different access cultures under a market-driven regulatory environment?

a. What is the rationale behind the main models of public Wi-Fi access?

b. What are the notions of the "public" held by these initiatives?

c. What are the assumptions made about the possible social applications of the technology?

This dissertation hypothesizes the emergence of a distinct field of public ICT access which appeared and evolved in the last twenty years coupled with the development of knowledge technologies. Furthermore, I theorize the formation of distinct access cultures that serve as cultural intermediaries in the production and distribution of ICT services and products. The second phase of this dissertation explored the configuration and boundaries of the emergent field of public ICT access, its historical roots, main characteristics and actors, and their symbolic and material practices through the comparative case study of three principal organizational forms of public ICT access in Austin, Texas: public libraries, non-profits and community sites, and commercial venues.

The identification of these three institutional forms stemmed from the analysis of policy discourses on public access. As explained in Chapter Four, in 1993 the NII identified public libraries as primary hubs for public ICT access in the nation (Kahin, 1995). Austin public libraries serve as sites for the study of this organizational form of ICT access. The NII also called for partnerships between communities and public and private enterprise to carry out projects to extend ICT use. In order to support this mission, NTIA created TOP in 1993. Between 1994 and 2004, various forms of community access across the nation were the recipients of $233.5 million of direct federal support through this program. Community access in Austin is best illustrated through the case of Austin Free-Net. Austin Free-Net (AFN) has served as a focal point for community computing activities since 1995 when the non-profit organization was created with the sponsorship of the City of Austin (Servon, 2002). The third institutional form of ICT access, access at commercial venues (e.i. coffee houses, restaurants, airports), emerged in 2003 under market-driven policies that sought to expand adoption and use of broadband through wireless services that operate on the unlicensed spectrum (White House, 2004).

Several reasons justify the selection of Austin, Texas as the site of this study. Austin embodies the very definition of success in the modern, creative economy, developing social and business forms of organization that support information-technology oriented economy (Florida, 2002). Austin managed to "reinvent" itself from a "sleepy college town" in the 1960s to a highly touted "technopolis" of the United States by virtue of a socio-economic engineered process – the Technolopolis Wheel – led by an association of local entrepreneurs, venture capital, the University of Texas, community support groups and the local government (Kozmetsky et al., 2004). In the early 1980s, business leaders and researchers of Austin's Innovation, Creativity & Capital Institute (IC2) – a think-tank specializing in science and technology commercialization and technology incubators – proposed the idea of transforming the San Antonio-Austin corridor into a main hub of the global, digital economy (Smilor, Kozmetsky, Gibson, 1988). Since then, Austin has been the site of a number of studies exploring the relation between knowledge, innovation, entrepreneurship and economic development (Florida, 2002, 2004; Mahdjoubi, 2004); the institutional solutions to rising digital gaps (Horrigan 2001; Servon, 2002); and the persistence of digital inequalities in the informational city (Rojas et al, 2002; Straubhaar et al, in press; Tufekcioglu, 2003). The present exploration of Austin's public computing networks contributes to the literature by establishing connections between the literatures on public policy for the information age, the institutional dimension of public ICT access, and the social applications of the technology.

The description and analysis of the emergent field of public ICT access in Austin draws on studies of new institutionalism in sociology (DiMaggio & Powell, 1991; DiMaggio, 1991; Granovetter, 1985) and research techniques of cultural production and sociology of culture, particularly, on the contributions of Jorge González's "Formation of

Cultural Offerings and their Audiences" methodology (FOCYP) (González, 1995, 1997, 2003). From the perspective of new institutionalism in sociology, I identify the organizational field of public ICT access based on providers' recognition of main organizations, suppliers, resources, consumers, regulatory agencies involved in the production and distribution of ICT services and products for the general public. New institutionalism and the critical sociology of culture place special emphasis on understanding institutional forms and practices in the context of historical dynamics of their organizational fields. I assume this perspective in producing an account on how the idea of certain forms of access provision developed, what factors drove the diffusion and institutionalization of these ideas, and how the professionalization of public ICT practice has proceeded (DiMaggio, 1991). New institutionalism also stresses the social and cultural "embeddedness" of organizations and institutions materialized in interpersonal and intragroup dynamics that mobilize resources in support of organizational activities (Granovetter, 1985; Castilla et al, 2000). In this study, I explore this dimension by describing how social networks operate among different organizations weaving connections, mobilizing resources and constructing meaning around public access initiatives.

It has been suggested that the great variety of public computing initiatives actually reflects diverse conceptualizations of public access to ICTs (Guthrie&Dutton, 1996; Dutton, 1999; Strover et al., 2004; Dutton et al. 2005). Attempts to operationalize the concept of "public access to ICTs" have typically relied on classifications of access models according to places and institutions enabling access (i.e. cybercafé, library, Internet booths; see Tomasello & McClure, 2002), technological mechanisms supporting connectivity (i.e. configuration of public wireless networks as hotspot, wireless cloud, mesh; see Slam, 2004, August) or business models behind the provisioning of the service

(Fuentes-Bautista & Inagaki, 2006). This study understands these particular sets of public access services and practices as access cultures generated through the interactions among policy discourses, and institutional, technological, and historical factors surrounding the provision of ICT services in public or quasi-public spaces of the city.

In examining particular access cultures and how they are formed in interaction with particular institutions, I followed Jorge Gonzalez's FOCYP methodology (1995, 1997). FOCYP is a research strategy to explore the historical development of cultural accoutrements, practices and publics across different social fields (religion, education, health, art, media, leisure, food and consumption). FOCYP offers the advantage of understanding media as a specialized social field with distinct dynamics of production and consumption (2000). Elaborating on Bourdieu's sociology of practice, FOCYP sets to examine different social fields and how they structure social life. The methodology departs from two important assumptions: (1) that a given social practice (i.e. public provisioning of ICT services) is developed in relation to others through processes of cross-fertilization and struggle; and (2) that a cultural practice is the result of two histories or trajectories: the history of the material supports of culture (institutions and cultural artifacts,) and the cognitive schemes of actors (norms, values, knowledge, class) (González, 1995, 2000). In order to examine the dynamics of any given social field, FOCYP applies a multi-method approach using cultural cartographies, surveys, chronologies and oral histories. Drawing on this approach, I employed socio-demographic maps, surveys, semi-structured interviews, and participant observation to convey a thick description of the emergent field of public ICT access, and the social practices its agents.

An important aspect considered by Gonzalez's methodology is the "material dimension of culture," and how it is manifested in the spaces of the city (1995, p.68). In

his study of different cultural fields in Mexican cities, Gonzalez subscribes Castells' understanding of urban spaces as social systems of production and distribution of resources and culture. Cities also operate as communication systems and creators of meanings of social life. Gonzalez's cultural cartographies are an attempt to make observable these dynamics mixing geographic analysis and oral and historical accounts that provides an understanding of the role of institutions in the social fabric of cities and towns. The geographic spacing and history of institutions, and people's understandings and symbolic interpretations of the presence, actions or absence of institutions and cultural artifacts bring to light the materiality of social fields. I adopt this perspective for the exploration of the social dimension of public computing networks, and their meaning in the social life of Austin, a blooming technopolis in North America. I also pay particular attention to capture shared understandings forged in the interactions of professionals and other agents of the field, and their reasons for embracing particular ICT practices. These practices are materialized in different "access cultures." I observe the formation of access cultures through the examination of organizational missions and visions of public ICT access, the organizational structure, programmatic offerings, symbolic representations of the technology and acceptable and customary practices around it.

To summarize, in describing the field of public access and the practices of access cultures, my research design explored three dimensions: 1) the spatiality of public access models; 2) organizational field and structure of institutions that support public access initiatives; and 3) their symbolic and material practices. In the first front, I explored the social-geography of different access initiatives in Austin by producing primary datasets and representations for locations and types of public access providers. Second, I examined the trajectory and organizational structure of the network of organizations

engaged in the deployment of public Internet access and use in Austin, their visions, and the nature of their relational ties through: a) semi-structured interviews with representatives of public access organizations, and b) extensive use of secondary data and previous on the history of access in Austin. Finally, I complement all these sources with information I derived as a participant observer in public access sites, and organizational and business meetings of public access providers. The following section details the research design, data collection and analytical methods employed in the institutional analysis of access groups.

2.2. Research design

I utilized a comparative case study design to assess the three main institutional forms of public ICT access: libraries, community sites, and commercial venues. Case study methodology generates insights into social processes in real-life context through multifaceted, in-depth investigations (Yin, 1994; Orum, Feagin & Sjoberg, 1991). Case studies provide a space for navigating through different phases of the sociological investigation, from exploratory and descriptive tasks to explanatory and more in-depth analyses. The contemporary nature of the object of my investigation makes for a case study design that taps into diverse aspects of particular institutions and organizations, establishing connections with larger social contexts and situations (Stake, 2003).

This project focuses on organizations and their agents as enablers and shapers of public ICTs programs. However, several theoretical propositions of this study question the relations between characteristics of agents involved in public access initiatives (i.e. occupational trajectory of staff, leadership, and volunteers) and outcomes. Thus, I employ an embedded case study design in which the main unit of analysis is the organization as a whole, and the smallest subunits are individual members (Yin, 1994, p.42). Between both ends, there are intermediate units such as the action of groups or social networks that

mediate or articulate connections between levels. As discussed by Yin, one of the advantages of this design is that it enables the observation of organizational and micro processes establishing connections between the two. However, it also poses several challenges for the researcher. The main risk is to privilege one level of analysis over other, "failing to address original research questions" and to draw effective conclusions (p.44). One way in which I handled this risk was by looking at social network data and contextual variables identified by informants as important factors guiding their actions and decisions. For instance, I inquired about their sources of information about technology, and about ideas on how to develop their work. I also asked about the opportunities and spaces in which organizational agents develop their expertise on technology (e.g. hobby, volunteer and interest groups in which they participate).

Another way in which this project stays on task is by performing several activities to increase validity and reliability of the research. One of the main strengths of the case study design is the use of multiple sources of evidence, allowing the researcher to address a broader range of historical, group, and behavioral issues. The use of multiple methods also reflects an attempt to secure a thorough understanding of the phenomenon in question, adding rigor, breath and depth to the investigation. Construct validity is supported by data triangulation through the use of various sources of evidence (qualitative and quantitative) to respond the questions posed by this dissertation. However, as Denzin and Lincoln (2003) suggest, triangulation is not a strategy of validation per se but an alternative to it. It should be accompanied by other techniques that help identifying evidence of converging lines of inquiry. I sought to improve internal validity of my analysis by developing chronologies of events and my observations. Reliability of different research tools and methods detailed below was enhanced through the creation of databases and records for observation.

2.3. Sampling, data collection and analytical methods

The description of the field of public ICT access, organizational characteristics of providers, and their material and symbolic practices was derived from the following analytical procedures:

1) the construction of a historical overview of main trends in the evolution of public ICT access initiatives in the nation and the City of Austin, employing information gathered from secondary sources and semi-structured interviews with stakeholders of Internet access in Austin;

2) a geographic exploratory analysis of public Internet access sites of the three different institutional forms of access in the City of Austin;

3) analysis of the organizational structure of providers through semi-structured interviews, and a survey of social network main organizations supporting public ICT access; and

4) analysis of organizational practices of providers employing information gathered through a survey of public access sites, and participant observation at these locations and in business meetings of the organizations under study.

The following section details the data collection and analytical procedures employed in each step of the process.

i) Historical overview of access initiatives

I constructed an historical overview of main trends of the field of public access by employing information gathered through secondary sources and semi-structured interviews with stakeholders. I developed a chronology of events from different sources and accounts. I gathered secondary materials in the form of journal, magazine and newspaper articles, and relevant literature. Work by Lisa Servon (1999, 2002) and John Horrigan (2001) represents the two main sources of academic literature consulted for this

section of the study. I also collected archival materials in archives of public access organizations and of the City of Austin Telecommunication and Cable Regulatory Affairs office during the course of my fieldwork (2002- 2006). Many of the important events prior to 2002 (e.g. emergence of new types of organizations, changes of existing ones, passage of new regulation, implementation of new policies, etc.) are described from the sources available in the popular press, organization's archives and legislative documents. They include laws and regulations, policy briefs, conference summaries and papers, organizations' annual reports, and opinion pieces in the press from agents in the field of public access (e.g. activists, city officials, academics). An important source of secondary information used in this study comes from the archives of the Cultural Mapping Project of Austin, a community of scholars committed to the multi-disciplinary study of media and ICT uses by minorities through multiple methods (oral histories; participant observation; surveys; geographic analysis; and historiography). As a member of the group, I had access to its archives, which contain a wide range of documentation and papers tracing the technology availability and ICT uses in Austin since 1999.

One problem I encountered referred to the lack of a source of consistent, statistical data on penetration and use of ICTs in Austin. The City of Austin and the Public Utility Commission of Austin receives some of this information from cable and telecom providers, but it is considered proprietary data of those companies, thus it is not disclosed to the public. While systematic quantitative data are scarce, copious information exists on records about use of public access sites. However, this data is inconsistent and fragmented across different institutions. I do not rely on it entirely, but it is employed as a baseline for my observations, and design of survey instruments.

Semi-structured interviews with key informants were an important source for this study. Semi-structured interviews are a common methodological tool to elicit specific

kinds of information (Denzin, 1989). Interviews are especially useful to investigate research propositions derived from the theory, and to derive information from key informants. Interviewing is also one means of counteracting the biased availability of documentary material, allowing the researcher access to common understandings and diversity of interpretations within an organization. This is an effective way to bring individual agency to the analysis of organizations (Lofland & Lofland, 1995). The dynamic of this face-to-face data collection method makes possible the scrutiny of the semantic context of statements by participants and leaders. The researcher can become more aware of how agents regard their participation in particular activities and settings, and how they understand the social world. This information is particularly relevant to locate the justification of actions and decisions regarding the configuration of ICT programs and services. It is also a way to access participants' individual and collective visions, imaginings, hopes, expectations and critiques about the technology and its uses.

General themes assessed during my conversations with stakeholders included their occupational trajectory, reasons for engaging in public ICT access initiatives, how they went about developing their practice, their visions about the technology, its applications and targeted groups of their activities. Semi-structured interviews also provided a longitudinal window to understand the evolution of the field of access. For instance, accounts about how actors became involved in the provisioning of public ICT services helped me to identify social and historical forces behind the process of institutionalization of these initiatives.

This project draws on different waves of interviews performed between 2002 and 2004 with workers and volunteers of public access programs (e.g., staff, managers and executive director, advocates and activist of access, volunteers, city and state officials, broadband providers). A first wave of interviews came from the evaluation of the Austin

Telecommunication Project Network (Strover et al. 2004). I initiated my observations in Austin in 2002 as a participant in graduate courses that examined the structuring of digital inequalities in the city. Later, as a member of the Cultural Mapping Project of Austin (Straubhaar et al. 2005), I participated in the design, data collection and analysis of other studies that examine ICT use at different public access sites (city libraries and community centers). Protocols of this round of interviews were modeled after the first project (see Appendices). Locations and subjects of these interviews were chosen based on a purposive sample. A purposive sample seeks to obtain insider understanding of key informants, one who has knowledge and expertise the researcher requires (Morse, 1998).

Another round of interviews with stakeholders took place between March 2003 and August 2004 incorporating newcomers of new public wireless initiatives emerging in Austin over this period (see Appendices). In this opportunity, informants were selected through a snowball sampling procedure initiated through direct contact with heads (leadership and managers) of public Wi-Fi groups. I made efforts to interview people positioned in different parts of the field of public access, who were adopting the new technology in their operations, that is people having different world views toward the past, present, and future of access. For example, I interviewed the executive directors of well-established programs (Austin Free-Net, public libraries), and the leadership of emergent community and industry wireless groups (Austin Wireless City project and Austin Wireless Alliance). I also interviewed members of advocacy groups (e.g. Electronic Frontier Foundation), broadband providers, city officials and librarians, and managers of community sites, non-profits and public agencies enabling public access. A total number of 57 conversations were collected between 2002 and 2005. The second round of interviews employed two questionnaires: the first explores the process of adoption, design, implementation and operation of public access services; and the second

gathers social network data of the organization. With the informants' explicit permission and as part of previous research projects, all interviews were audio-taped and transcribed, and confidentiality was assured to participants. These data become essential in examining the changing notions of public access, rationale behind these services, conception of the public, about technology and its applications.

ii. Geographic exploratory analysis

The spatial analysis of public ICT sites in Austin pursued two related goals: first, to visualize the patterns of public Internet rollout in the city through the construction of a multi-layered GIS map of public access sites by type of provider; and, second, to appreciate the socio-geographical patterns of the deployment of these initiatives in Austin. Geographic Information Systems (GIS) is a computer program to store, integrate, manipulate, analyze, and present data related to spatial locations.

The use of GIS in the present study is particularly suitable for the following reasons: First, Internet access sites have a unique spatial signature linked to the institution or organization that hosts these services. Even the deployment of public Wi-Fi in Austin has proceeded in the mode of wireless hot-spots, or narrow spaces of connectivity enabled by the transmission of low-power broadband signals supported by a wireless access point (WAP) (Fuentes-Bautista & Inagaki, 1996). Second, geographic coverage by institution may vary, revealing the singularities, specificities and focus of their mission, vision and target publics. Third, GIS allows the geography of public Internet access to be linked to other pertinent spatial data, such as Census demographic data, allowing the investigation of macro, socio-geographical patterns of public Internet infrastructure.

The following procedure was followed to construct a geographical inventory of public Internet access in Austin in GIS, using the program ArcGIS:

1. Identification of the street addresses of known public Internet sites: Data sources included organizations directories, and hotspots locators available on the Internet. These records correspond to the location of these services in Austin by September 2004 (N=232).

2. Geocoding of public Internet sites and hotspots: Institutional locations were matched to the street address dataset provided by the City of Austin's Infrastructure Support Services to produce city maps.

3. Overlaying and matching with additional spatial data: Public Internet maps were overlaid and matched with zoning district data, socioeconomic indicators of places by using appropriate common spatial variables (zip code, census tract, census block, other communications infrastructure, etc.).

iii. Analysis of organizational structure

I examined the social structure of the field of access through social network analysis. Social network analysis is a set of procedures that describe patterned relational ties through which groups or actors interact, discussing the implications of such interactions on organizations or actors' performance (Wasserman & Faust, 1994). Social network analysis considers two aspects of social interactions: the existence or absence of relational ties, and the nature and strength of the relationship associated to this tie (Granovetter, 1973). This procedure combined with semi-structured interviews was employed as a method of observing the process of construction of meanings and collaboration about access and new technologies among different stakeholders (instrument included in Appendices).

The social network questionnaire for organizations measured four types of relational ties between their particular organization and others in the list. These ties assessed collaboration in terms of: (a) payment or reception of funds, (b) technical

cooperation, (c) visions and strategic cooperation, and (d) volunteer cooperation. The sum of the scores serves to construct a relational measure reflecting the proximity between organizations from 0 (no relationship) to 4 (all four types of relationships). This method has been employed in social movement research to trace the relation of different kinds of exchange among groups, movements and institutions (Diani, 2002). Snowball sampling data provided by informants became the other important source of network data pointing to actual individuals that weave the connections between institutions. The snowball method was particularly helpful in capturing the elite network of organizations or actors in the field of access. However, "nodes" that are not well connected to a significant number of other nodes in the network (e.g. "isolates") tend to be disregarded (Hanneman, 2002). Keeping in mind such limitations, information from secondary data (e.g. annual reports, project and program descriptions) and semi-structured interviews with representatives of core organizations were used to further explore the nature of organizational relationships.

I tested the patterns of association among organizations through two basic procedures: (1) Eigenventor centrality scores provide an assessment of an organization's prominence in the network; and (2) visual representation of network patterns. Analyses were performed using the network analysis software UCINET 6 and its component Netdraw (Bogartti et al, 2002). Eigenvector centrality provides an evaluation of an organization's prestige in the network. This measure is a function of the centrality of the institution to which others are connected, weighted by the strength of their relational ties (Wasserman & Faust, 1994). The index is capable of assessing actors' prestige according to the importance of actors to which they are connected, taking into account the strength of the relationship between actors. Visual representations of the social network of organizations are produced based on grouping patterns and strength of the links between

actors. Setting the average distance or average link between pairs of actors as a criterion, the analysis establishes the distance between actors that are structurally equivalent or similar to this value, and displays them in a graph. Thus, social distance among actors is translated into graphical distance between nodes of the graph.

iv. Analysis of organizational practices

I examined materials, cognitive and symbolic practices of public access providers through surveys and participant observation. The use of quantitative and qualitative data gathering techniques ensures a thick description of the dynamics behind access cultures. Quantitative data gathering techniques such as surveys can serve as data condensers revealing the patterns and big picture of a social phenomenon. Qualitative methods, by contrast, are data enhancers that make possible the development of processual, in-depth observations of the social dynamics within organizations (Ragin, 1994).

I employed surveys of public hotspots (n=47) representative of the universe of Wi-Fi providers (N=222) in different geographic areas of the city to discuss the broader patterns of configuration of public Wi-Fi in the city. A quota sampling technique was used to create a data set of public access sites reflecting different access models and socio-geographic patterns of dispersion of sites throughout the city[8] (Table 2). These venues have been visited in person, and managers were asked to complete a questionnaire detailing information about the year in which the service started, reasons for adoption, types of services offered, profile of users and acceptable use policies (see Appendix I).

[8] The following variables are employed to create sample frames: 1) type of model (e.g., library, community access site; commercial hotspot.); 2) 2000 median income of the zip code area where a venue is located; 3) level of education according to 2000 census; and 4) geographical location of a venue (e.g., North, South, Central/Downtown, East and West).

Table 2.- Comparison between survey sample and population of Wi-Fi hotspots

	%Within sample (N=47)	% Within population (N=220)
By provider (quota frame 1)		
AWCP[a]	38.3%	37.7%
Independent	36.2%	22.7%
Commercial WISP[b]	19.1%	33.6%
Telco/Cable	6.4%	3.2%
By facility type (quota frame 2)		
Restaurant & bar	34.0%	35.0%
Coffee house	23.4%	27.3%
Lodging	10.6%	11.8%
Library	10.6%	9.5%
Store	8.5%	8.2%
Park & square	4.3%	2.3%
Non-store service	2.1%	3.2%
Public building	2.1%	1.4%
Nonprofit org	2.1%	0.9%
Airport	2.1%	0.5%

a. Includes facilities served by Less Network's wireless system, such as the city government sites and public library sites.
b. Includes facilities served by national commercial providers (e.g., T-Mobile) and those served by local commercial providers (e.g., WiFi-Texas).

The questionnaire combined closed and open-ended questions to enhance the tool's capability of gathering information from the respondents' perspective. Open-ended questions were used to collect information about targeted users of public Internet services, and reasons for adopting the technology. In the case of hotspots, the questionnaire further assessed the cost of providing the service, the venue's use of the technology for their own operations, and managers' attitudes toward the economy and quality of life in Austin. Table 3 details the number of public access sites by model and by year in which the questionnaires were administered.

Table 3. Sample of public access sites by institution

Access Model	N	Year
Public libraries	8	2002 & 2004
Community sites	14	2003
Hotspots at commercial venues	47	2004

An important source of data collection has come from my role as a participant-observer in the field of public access assuming different positionalities. Participant observation produces the most direct evidence of action as it unfolds in everyday practice of participants, and how their actions interplay with organizational dynamics (Lichterman, 2003). As a participant observer in diverse public access sites of the city, I explored the nuances of everyday interactions both in physical and social spaces of different settings throughout the city (libraries, immigrants and homeless shelters, food pantries, senior centers, cyber-cafes). I held informal talks in these places, and took notes of the social and material organization of the physical place (interactions with the staff, among customers, and between customers and staff members, seating patterns, the profile of frequenters, etc,).

By mid 2003, I also started attending group and board meetings of access groups (Austin Free-Net and Austin Wireless City Project). I closely observed these discussions, the process of decision making regarding different issues, noting the topic on the agenda and the overall process of deliberation, and the themes and actors drawn in these discussions. At Austin Free-Net, I volunteered to gather and compile information needed by the staff and leadership to discuss issues regarding their relationship with partner organizations, and the outcomes of research projects from different graduate seminars at the University of Texas. These activities led me to accept the invitation of Austin Free-Net to be part of its board of directors in July 2004. Through this experience, I became acquainted with people in the world of non-profits involved in the provision of ICT access. As an acting board member, I had to go through the process of interacting with

city officials, donors and supporters of access, social service agencies and other partners of Free-Net activities. As an Austin Free-Net board member, I also served as institutional connection between the organization and several community groups. One of these groups was Casa Marianela, a non-profit organization devoted to providing shelter and assistance to Latin American immigrants in the heart of East Austin. My contacts with "Casa" drew my interest in further exploring the case of the configuration of public ICT services targeting recent immigrants. Thus, I extended my observations to other sites (e.g. a public library in the East side, and a job training center) with a focus on how different access cultures mediate the relation between the technology and immigrants, an increasingly significant population in of Austin community. My role as a Latina and immigrant to this country, and as an AFN member raised issues about the data collection process. Limitations to my role as participant-observer in the field of access are addressed in the following section.

3. LIMITATIONS OF THIS RESEARCH

This project is susceptible to several limitations. The first limitation of this project is the use of different waves of data collection through instruments that has been slightly altered in each occasion (see Appendices to this proposal). Although survey and interview protocols built off each other, they were altered on different occasions to tap particular aspects of the institutions under study. I attempt to control for changes through explanation of field work conditions, and the elaboration of a database encompassing all organizations under study. However, since I did not collect all the data employed in the investigation, important nuances of the cases can escape my analysis.

A second limitation stems from the research genre employed by this project. Because they focus on a thorough understanding of particular situations or circumstances surrounding a given case, case studies face problems of generalizability of their findings

and claims. However, case studies can provide more than simply idiosyncratic understandings. They provide a baseline for comparison with other cases, and a map of evidence explaining particular phenomena (Stake, 2003; Yin, 1989). In other words, how we learn from a singular case is related to how this case is like or unlike others. They are a rich source of experiential knowledge and elaboration of grounded propositions to inform further investigations. Data triangulation and a multi-case study design, as the one followed by this project, builds a layer of comparison within the specific study of public access networks in Austin.

A third limitation of this project is linked to my role as active participant in one of the organizations examined by the research. Taking this role may influence my thinking in the interpretation of evidence and in the data analysis. Likewise, such positionality within the research might have influenced responses of some of the informants included in the study priming certain responses over others. I appeal to reflexivity and my own trained subjectivity to address such potential issues. I will indicate and discuss issues requiring reflexivity in observation, rapport and reportage as they emerged in my investigations.

On another key issue, I am committed to the anonymity and protection of human subjects involved in this research. This is also important to safeguarding and balancing the power of participants to make their points of view heard in this study. The majority of my informants are active participants in the field of public ICT access in the city of Austin, which is a fairly small community. In order to preserve anonymity I refer to informants only by their occupation and position in the particular organization under study. Identifying participants by their title and occupational background is also useful to highlight the structural dynamics behind the works of a given organization or institution. On occasion, names and identities of agents are revealed as they are mentioned in

testimonies, and self-identified in archival materials collected in my research. In these cases, I chose to employ the actual names as they reflect the perception and positionality of a third party, or exist in publicly accessible archives.

4. CONCLUSIONS

In this chapter I have presented the methodological design devised to answer the guiding questions of this study. A historical and a framing analysis of policy discourses on public ICT access, and a cross-sectional institutional analysis of providers of public ICT access are proposed as research strategies to assess the implication of changing policy discourses on access and on material and symbolic practices of different access cultures. This assumes that policy discourses, while not determining action of providers, do frame their actions and understandings of the social, normative and material conditions in which the public is entitled to engage with new technologies. Through a comparative case study of the three main institutional forms of access (libraries, community access and commercial venues) in Austin, Texas, I explored the social mediation role of these organizations in the information age. I combined qualitative (semi-structured interviews, participant observation) and quantitative analysis (surveys, social network analysis, and spatial geographic analysis) in the generation of thick accounts on the social practice of public computing networks, and how they reflect changing notions on public Internet access.

Together, the following three chapters delve into the questions posed by the research based in the inductive process promoted in the design. Chapter Four takes a longitudinal perspective to the examination of the different ways in which public access to ICT has been framed by federal, state and local policy between 1995 and 2005. The fifth chapter discusses how policy and other social forces interplayed with the agency of community and business organizations in the institutionalization of the organizational

field of public Internet access in the U.S. and in Austin. The dynamic tensions of this process are discussed through the analysis of the rationale behind the design of public access programs at libraries and other Austin Free-Net sites, their changing institutional structure, conceptualizations of ICT services and their publics. The sixth chapter provides an account of how distinct access cultures are configuring public access through the unlicensed spectrum through to the case of emergent public Wi-Fi networks in Austin. As a way of addressing the implications of providers' decisions on social and equity issues, this chapter will discuss providers' notions of the public and intended application of public wireless broadband services. Finally, the seventh chapter synthesizes the research findings and discusses how they add to the existing literature of studies of technology and policy.

Chapter Four: Continuities and transformations in public access policy

This chapter examines how the symbolic power of the national, state and local government has shaped normative discourses on public access to ICT. Facilitating open access to public information, supporting opportunities for free speech, and promoting fair competition in the marketplace are some of the tenets that have historically guided public policies asserting people's rights to access information and communication services. This discussion about the several conceptualizations of public access to new media technologies considers two important sets of related issues. On the one hand, there is the question about how U.S. policy and law has understood and framed the rights of the public to access and use these systems that mostly are privately owned and operated. On the other hand, there is the problem about what social purposes, functions and capabilities are supported by public access rules and programs enacted by federal, state and local governments. Providing answers to these questions has traditionally justified the ability of the government to regulate in the public interest, arbitrating different parties' rights to access the media. Thus, this work is meaningful to understand how public interest is being reframed in the convergence era, and what possibilities are effectively articulated and supported to enhance people's ability to participate, gather information, speak and communicate over digital networks.

The first section of this chapter traces the roots of public access rules by examining how public interest in Federal communication regulation fostered the emergence of different conceptualizations of access with divergent conceptions of the public, its entitlements and the social function of media technologies. I have suggested that these several conceptualizations are best understood as distinct public access regimes that have transitioned toward convergent media scenarios. I have also suggested that the

adoption of market-driven policies to promote the diffusion of broadband and mobile communications have catalyzed the clash of traditional public access regimes, undermining the protections of people's rights of access to digital environments. The second section of the chapter explores how different public access regimes have been refashioned by Federal legislation dealing with media convergence. The discussion then turns to the analysis of the main frames employed by federal programs and policy directives that since the mid-1990s promoted public ICT initiatives. I focus on the principles that have justified these interventions; goals of state involvement in these initiatives; places and institutions designated for public ICT access; definitions of the public, and intended social functions of the technology. Later in the chapter, the same categories are explored in the case of Texas regulation, a state that in the last decade has pioneered telecom and cable policy dealing with media convergence. Finally, a frame analysis of local government initiatives in the City of Austin serves as a layer of comparison to illustrate the tensions generated by divergent interpretations of state regulation to promote citizens' engagement with new media.

1. ACCESS REGULATORY TRADITIONS AND THE PUBLIC INTEREST

A historical overview of the evolution of access regulation is necessary to understand the normative roots of different policy discourses on public access. In the U.S., communication regulation concerning access issues grew under regulatory traditions that have drawn historical divisions between communication delivery services and information services. Driven by concerns about the operation of competitive markets, the first tradition granted to the general public and would-be competitors fair access to carriers of telecommunication services. First, telegraph regulation and then telephone law developed under this tradition. The second tradition has grappled with the problem of access to the media regarding them as information systems and a vehicle for expression.

This tradition has dealt with questions about the definition of speech rights of media owners and the public, and availability and delivery of public and local information through these systems. For instance, rules arbitrating access to the press and broadcast media have tended to privilege speech rights of media owners over those of the public. Although ICTs have made regulatory divisions unsubstantial, the distinction between "access to telecommunication services" and "access to information services" is a crucial theme for the present and future of digital media, and how regulation will support the rights of the public to speak, gather information, and interact in the post-convergent era. The following section discusses the origins of different interpretations of access rights to information and communication systems, their assumptions about the public, and the nature of state intervention to protect these entitlements.

1.1. Access regulation as expression of the public interest

In the U.S., the press has historically operated under a *free marketplace model of access* which assumes that media function as a free marketplace of ideas where all voices can be heard (Barron & Dienes, 2004; Stein, 2006). According to this model, rules enforcing access of voices not affiliated with newspapers like those of the public actually violate speech rights of the editors. State action to grant access to communication systems did not emerge as an attempt to protect speech rights of the public. In fact, access regulation first appeared as a central theme of public interest regulation that set out to end the monopolist abuses of railroad companies in the smid-1890s. As a regulatory theory, public interest in the U.S. is rooted in ideas of welfare economics that justify state intervention in the marketplace to secure both economic efficiency and balance the distribution of wealth (Horwitz, 1989). By the turn of the century, railroads had become the neural system of the country, facilitating trade and communications coast to coast. Abusing their might, railroad companies applied rate discrimination favoring some firms

and locales over others, operated with few or no safety standards, and recurrently violated local regulations (p.24). Attending to rising demands of agrarian social movements and judiciary activism, railroad regulation sought to reestablish the people's rights to access markets in a fair and non-discriminatory basis.

Following interstate commerce regulation, access rules were imposed on railroad companies, requiring them to abide by common carrier and local rights-of-way obligations. Common carriage rules enforced service provision on a fair and non-discriminatory basis, granting access to anyone able to pay for it. Railroad companies were also required to compensate localities through payments and other arrangements for "local rights-of-way." The assumption was that every locality and every citizen could potentially act as a producer with the right to enter and compete in the market on an equal footing. The same rationale that assumes this close connection between carriers and commerce still informs access rules that apply to Internet providers such as telephone companies. This connection between transportation and communication law was established by regulation of the first electronic communication system: the telegraph.

A century before the Internet, the telegraph was the first medium enabling both point-to-point communication and transmission of information over long distance. However, telegraph law saw the technology as an electronic carrier rather than as an electronic newspaper (Pool, 1983). There are several reasons for the decision to treat electronic communications as a commodity rather than as a vehicle for expression. First, under private contractual arrangements, telegraph lines expanded along railroad tracks, and transportation law and its principles were seen as the natural regulatory paradigm to be applied to telegraphic transmissions.[9] Second, telegraphic communications that

[9] By 1893, a Supreme Court decision determined that "telegraph companies resemble railroad companies…in that they are instruments of commerce" (Primrose v Western Union Telegraph Co., 154 US 1, 38 L.ed. 883, 14 s.Ct 1098).

depended on few, coded words–only readable by operators at each end of the line– fed the general perception of the innovation as a carrier of messages. Although the telegraph played a crucial role as a news delivery system since the Civil War, it was a commonly held belief that expression, as a manifestation of people's ideas, would require a medium capable of enabling debate (Pool, 1983). From the days of the telegraph until the rise of the Internet, the *common carrier access model* has fostered the notion of access as an enabler of free, competitive markets. This belief is mostly reflected in public interest regulation of telecommunication services that requires providers to conform to common carrier rules by providing services in a non-discriminatory basis, and to pay a franchise fee for the local right-of-way.

The original notion of access as individuals' right of entry to the market was transformed into the ideal of universal availability of services with the advent of the telephone. In 1907, AT&T first used its company slogan "one system, one policy, universal service," as part of a corporate strategy aimed at undermining the position of multiple rival networks. AT&T's strategy was to peddle the idea of consolidating independent telephone exchanges into local monopolies that could interconnect as many users as possible (Mueller, 1997). The resulting pervasive network that overcame the rather fragmented and disconnected scenario of previous years was an excellent showcase for this model. The notion of universal service as adopted by the Kingsbury Agreement of 1913 subordinated the availability and affordability of telephone services to the existence of a monopoly for basic telephony. As Streeter explains it, AT&T's original vision of universal service was not one of users accessing the service everywhere but one of "customers supporting the business by calling a large base of other customers" (1996, p.47). Understood in these terms, the principle of universal service pursued by the federal government sought to facilitate commerce while protecting individuals' welfare by

protecting people's rights of access as consumers of telecommunication services. Common carriage and universal service, the two substantive principles that govern access to telecommunication systems until today, have historically justified regulation as enabler of free, competitive markets, rendering a definition of users as active agents in the market and consumers of these services. A different conception of access rules that recognized the role of information and communication systems as enablers of the public sphere rose in broadcasting regulation with the advent of the radio.

Although radio technology emerged at the turn of the century from the commercial race to develop the "wireless telegraph" (Marvin, 1988), by the early 1920s the spread of cheap radio receivers, the rise of commercial radio stations, and the industry's vision of radio as a "household music-box" shifted the trajectory of this technology first seen as a point-to-point communication system into a blooming commercial broadcasting system (Streeter, 1996). In the context of the economic downturn of the Great Depression, spectrum policy was largely informed by business considerations about the sustainability of a thriving, commercial broadcasting system (Pool, 1983; Horwitz, 1989; Streeter, 1996). Streeter has discussed how these policy arrangements reflected the ideology of "corporate liberalism," or the conciliation of ideals of individual, private interests with social goals under the ideological and political economic framework of corporate capitalism (p. 22).

The rapid expansion of radio broadcasting quickly transformed the medium into an important vehicle of political expression. In the late 1920s, it was evident that broadcasting had grown to exceed the social impact of the press (Pool, 1983; Streeter 1996). Communication policy was then faced with questions about how to reconcile economic goals supported by the restricted access systems of radio licenses with ideals of democracy and free speech. The answer to the dilemma was finally given by the Radio

Act of 1927 through the creation of a *trusteeship model of access* where radio broadcasters were given control over oligopoly markets in exchange for the expansion of their services nationwide.[10] Beyond the scarcity argument, special regulation of the electronic medium was justified based on its pervasiveness and impact on public opinion. Access rules supported by public interest goals sought to protect both speech and consumer rights of the public by: 1) establishing licensing restrictions on individuals or firms monopolizing or attempting to monopolize radio communications; 2) prohibiting the government from using its licensing power as a tool of censorship over private radio communications; and 3) mandating that all stations choosing to air political views grant equal time to rival candidates (Pool, 1983).

The trusteeship model marked an important departure from prior conceptualizations of access in communication regulation. First, it recognized speech rights in the electronic medium combining market economics and First Amendment principles. This understanding arose from classical liberal interpretations of freedom of expression as those of the press associated with the existence of the marketplace of ideas. Second, it conferred access rights only to political candidates, restricting them to political speech. In other words, the statute did not grant access to all citizens but only to those representing public voices and views. Third, it departed from an implicit recognition of media as a public sphere, and an important force in social and political processes. However, this conceptualization remained bounded to ideals of representative democracy rather than to democratic participatory principles.

Bringing together broadcasting law and telephone and telegraph rules under a single statute, the Communication Act of 1934 sanctioned a dual access system that

[10] Solutions based on frequency sharing, which would allow more voices on the airwaves, were dismissed on economic grounds because this regime would give fewer hours a week to each broadcaster, thus making the business less profitable for them (Pool, 1983, p.114).

distinguished between telecommunication services and broadcasting services (Aufderheide, 1999). The first access regime, which I have called the common carrier access model, followed market principles that treat telephone networks as mere carriers of messages with no speech rights associated with this function. Pursuing the overarching goal of fair and non-discriminatory access for everyone, this access regime sought to make telecommunication services available to all Americans at reasonable rates (p.16). The second access regime that I identified as the trusteeship model of access, recognized speech rights of mass media but associated them with property rights of media owners (p.14). Access rules granted full speech rights to broadcasters, while providing a small space for public voices represented by views of political candidates. This later model offered the first window to carve out spaces for public voices on the privately owned broadcasting systems.

This space was further enhanced through actions of the Federal Communication Commission (FCC), which in 1949 required broadcasters to cover public issues of importance to the local community, and to provide reasonable opportunities for expression of dissenting views on controversial topics[11]. With the goal of fostering the growth of an informed public, and protecting public speech rights against possible restraints, the FCC formulated a set of rules that during the 1950s led to the expansion of the Fairness Doctrine: a general standard of equal treatment of information on controversial issues. Although many of these principles would be repealed in late 1970s and 1980s, access rules in broadcasting set the stage for the emergence of the first public access regimes in the U.S. in the following decades.

[11] Report on Editorializing by Broadcast Licensees (13 F.C.C. 1248, 25 P & F rad. Reg. 1901, 1949).

1.2. The emergence of public access regimes

Public access rules or regulatory actions to promote direct involvement of the public in the media arose in different quarters of communication policy and law in the 1960s, infused with the spirit of the civil rights movement, and supported by the claims of judicial and regulatory activism of public interest groups (Horwitz, 1989; Aufderheide, 1991; Kellner, 2004). As did other social activists of this era, public interest groups in communication regulation advocated for more citizen participation in the policy process. They enthusiastically welcomed the advent of new communication technologies such as satellite television and cable, regarding them as opportunities to expand both programming offerings and audience choices. But most importantly, these groups organized as a broadcast reform movement, demanding participation of public voices in the media, and promoting the vision of the public as an active audience, producers of messages and architects of the public sphere.

Throughout this era, judicial and civic activism made extensive use of First Amendment principles to advocate for public access regulation. In 1969, in Red Lion Broadcasting co. v. FCC, the Court unanimously upheld the Fairness Doctrine and its corollaries as an expression of the public interest considering that "it's the right of the viewers and the listeners, not the right of the broadcasters, which is paramount." In the face of potential abuses of management power, the right to reply was established as an access mechanism, ensuring diversity of voices on the media (Stein, 2004).

Supporters of the public forum approach to media regulation argued in favor of mass media understood as a modern agora where democratic debate takes place (Barron, 1967, 1973). The work of constitutionalist Jerome A. Barron was of particular importance in advancing the notion of the *public's right of access* (Horwitz, 1989, p.250). Barron (1969) called attention to citizens' diminished power to communicate ideas in the

contemporary U.S. media market. He criticized what he called the "romantic" view of free speech, which ignored that the American communication system had evolved from street corner speakers, pamphleteers and small papers to an industry dominated by large and powerful corporations. Barron rejected the notion of the free marketplace ideas that guide the press arguing that just as there is "inequality in economic bargaining power" in the contemporary media market, there is also "inequality in the power to communicate ideas" (1641). In raising the question of imbalances in the power to communicate, Barron brought attention to the limitations of ability of the contemporary American media system to function as a free and open forum for democratic debate. At the time of his writings, Barron (1969, 1973) suggested that without a citizens' right of access, speech could be stifled. These ideas were welcomed by civil and political organizations that mobilized in the late 1960s and early 1970s, demanding more space for public voices on the national broadcasting system.

The creation of the Corporation of Public Broadcasting (CPB) in 1967 was also influenced by this vision. To the eyes of regulators and the public, as television spread as the "vast wasteland" run by commercial networks, public broadcasting engendered the promise of a safe, "instructional haven for public voices" weaving ideals of plurality of voices and localism with the notion of television technology as a community builder and social unifier (Streeter, 1996, p.188-189). Although weak funding and lack of direct public involvement in the medium limited the potential of CPB to be an inclusive public sphere, the experience opened public spaces in an otherwise commercial broadcasting system (Aufderheide, 1991). Nonetheless, it was not until the early 1970s when a truly public forum for citizens' participation in the media would emerge through the creation of public, educational and government (PEG) channels on cable television.

1.2.1. Access to the public forum: The people's right to speak

The creation of PEG channels marked a watershed moment in public access regulation in the U.S. As Stein explains, public-access television is modeled after public forums (2006). Rather than associating access rules with media speech or with single channels, the FCC established cable regulations that set aside a few channels on the multichannel media for public expression (p.77). PEG channels were not public property, but designated spaces for public expression. However, since the 1980s, policies treating media and communication systems as public forum have been both affirmed and rejected by courts and regulators (Barron, 2003; Stein, 2006). This inconsistency has historically muddied the notion of the right to media access based on the *people's right to speak*. Nonetheless, this notion has provided a fertile ground for the articulation of discourses of the new media as a virtual town square enabling citizens' expression and participation in the electronic democracy of the 21st century.

Different from the trusteeship model of access that grants almost exclusive speech rights to broadcasters, cable regulation in the early 1970s engendered a broader notion of public access based on an empowering approach to speech rights. It also opened a new path for citizens' engagement in media characterized by the redefinition of audiences as speakers and producers of media messages. Similar to techno-utopian discourses that surrounded the Internet in its early days, discourses surrounding the introduction of cable in the 1960s and 1970s framed the medium as a "new technology" promising unlimited amounts of broadcasting to the home (Streeter, 1987). Proponents of the marketplace model of access employed this frame to advocate for less regulation of the new medium (Pool, 1983). Meanwhile, media activists saw cable technology as an opportunity to empower local voices through citizens' involvement and control of the actual process of production and distribution of TV messages (Shamberg, 1971). Ultimately, recognition of

the public's right to speak on cable systems would come in the form of a hybrid regulatory system of access that preserves speech rights of cablecasters while opening spaces for local voices (Barron, 2003; Kellner, 2004; Stein 2004).

In practice, public-access regulation of cable was the result of the convergence of the regulatory traditions of telephony and broadcasting (Strover, 2004). As telephone companies, cable providers must lay cable in the ground and string it to electric poles, so they had to negotiate agreements with municipalities for the use of the public right-of-way. Informed by telephone and public utility law, municipalities conceded de facto local monopolies to cable companies in exchange for a percentage of their revenues (typically 5%) and certain service standards. However, at the federal level, regulation followed a different trajectory. Concerned with protecting the broadcasting licensing system from the perceived threat of cable competition, in the early years of cable TV the FCC issued rules banning cable in the top 100 markets, while requiring cable companies to carry local broadcasting signals, generate original local programming, and not carry certain content exclusive to broadcasters. Under the pressure of local programming requirements, the industry conceded space for communities that mobilized and demanded rights of access to the new medium through franchise agreements. In 1972 the FCC applied common-carriage rules to cable providers, instituting PEG channels as a mechanism to grant access of public voices on privately owned local cable systems (Stein, 2000).

However, this broad and participatory public-access regime would not remain uncontested. The main challenge to public-access channels has come from court decisions that from the mid 1970s onward have applied a defensive interpretation of speech rights reinstituting editorial control of cablecasters over spaces conceded to public voices. They drew on decisions that struck down the public's right to reply in

newspapers[12] and have denied people's speech rights in favor of the commercial speech of broadcasting advertisements[13] (Stein, 2006). In 1979 the Supreme Court declared that cable-access regulation violated the editorial prerogatives of Midwest Video Corporation, a multi-system operator. Treating cable systems as analogous to broadcasting stations, the Court decided to strike down common carriage obligations on cable, leaving PEG channels with no regulatory protection. Speech rights of cable operators prevailed over those of the public; in other words, speech rights were made contingent on property rights over the delivery system.

After Midwest Video Co., PEG channels subsist under the sole protection of municipal franchise agreements. In fact, since the 1980s, the availability of public-access channels has become increasingly dependent on the political clout of local franchising authorities, and on the vitality of local groups of independent producers and advocates of access (Kellner, 2004). In 1984, Congress enacted the Cable Communication Policy Act which codified many of the cable regulations developed since the 1960s. The 1984 Act gave state and local government the power to award franchises and to determine the qualifications necessary for systems to be awarded local franchises. The goal was to encourage the growth and development of cable systems that would be responsive to the needs and interests of the local community, providing the widest possible diversity of information sources and services to the public.[14]

However, operating under this framework, public access has not been created equal in all localities. Access channels prosper unevenly in the U.S. and their outreach

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[12] In *Miami Herald Publishing Co. v. Tornillo*, 418 U.S. 241 (1974) the Court struck down the right to reply of those attacked in the newspaper's editorial pages considering that the rule constituted a violation of speech rights of the newspaper owner. *Tornillo* marked a historical shift in the interpretation of speech rights as a function of private property rights in the media.

[13] *CBS Inc v Democratic National Committee*, (1973) 2091, 2096.

[14] *Cable Communication Policy Act of 1984*, Pub. L. No. 98-549, 98 Stat. 2779 (1984) (codified at 47 U.S.C. 601 (4).

and impact appear highly contingent on the economic, cultural and social capital of their host communities. Federal cable regulation has continued to acknowledge the ability of municipal authorities to require PEG channel capacity, facilities and equipment through franchise requirements. Nevertheless, new trends towards the recognition of the editorial power of cablecasters on PEG channels have emerged in the last two decades. Since the 1990s, cable regulation has reinstituted the editorial rights of cable providers giving them the power to censor potentially obscene materials on public channels (Strover, 2004).

Devoid of free speech principles that assert citizens' rights to speak and to access media, local cable franchise agreements have been transformed into mere contractual arrangements to fund the operation of PEG channels, a requisite that not all localities are in the same position to negotiate. However, this conception has provided a fertile ground for the articulation of discourses of the new media as a virtual agora enabling citizens' expression and participation in the electronic democracy. These experiences have also justified growing community and local government involvement in the provision of new media services. This trend has continued into the twenty-first century under new institutional forms such as free-nets and community technology networks, and through direct municipal involvement in the provision of ICT services.

1.2.2. Access to information: The people's right to know

Legislation promoting access to public information is perhaps the primary arena from which communication policy and law has supported public access initiatives. In fact, the concept of "public access" was first made law as a principle associated with the *people's right to know* with the passage of the Freedom of Information Act (FOIA)[15] in 1966. Public access based on the people's right to know is a relatively recent concept in the United States. Although educational goals were the priority of states and localities

[15] 5 U.S.C. sec. 552. (1966)

that funded the first free, public libraries in the country,[16] libraries have played a crucial role as depositories and local distributors of public records since colonial times (Oehlerts, 1991). Open access to library collections, as advocated by the free-library movement of the post-independence period, transformed these institutions into centers of civic activities across the nation. Given the centrality of public libraries in the fabric of American life, Congress officially authorized the distribution of public records through libraries and historical institutions in early the 1800s. However, the decision about what ought to be disclosed remained an exclusive prerogative of government agencies until the enactment of FOIA (Doyle, 2003). The statute formalized a system for distribution of public information, linking government and state agencies to public libraries and historic archives. As a result, libraries legally became the designated institutions facilitating people's access to public information.

The passage of freedom of information regulation was the result of more than three decades of civic and judiciary activism to establish the right to access government records. As victims of growing government surveillance and secrecy during the two World Wars and the subsequent Cold War, the press, activist groups and members of Congress mobilized in the 1950s to increase transparency and public control of state affairs (Relyea, 1977). The media played a crucial role in shaping modern understandings of the people's right to know. Waves of litigation involving the press and federal and state agencies in 1950s and 1960s contributed to validation of the people's right to attend public events and to have access to government facilities. Although the Supreme Court ultimately interpreted media access rights as limited to those established by law to all citizens such as citizens' access to court proceedings in a lawful trial,

[16] The educational purpose of public libraries justified government support to the institution since 1833. The state of New Hampshire was the first in employing monies of a state Literary Fund to subsidize a public library open to all citizens of Peterborough. New York, Massachusetts and other states rapidly followed (Oehlerts, 1991).

actions of newspapers and journalists in court strengthened the notion of "access rights" associated with ideals of transparency, accountability, public deliberation, and an informed democracy.[17] Public access to government records – as an expression of these principles – has proven to be a pillar of American democracy.

Since its passage in 1966, FOIA has led to the disclosure of fraud, abuse, and mismanagement by federal and state agencies, identification of unsafe consumer products, harmful drugs, and serious health hazards. But the road to these achievements has not been free from difficulties. In the 1970s and 1980s, computerization of government records was transformed into a mechanism to avoid disclosure of public records (Halstuk & Chamberlin, 2001). Federal agencies withheld computerized information arguing that such materials were not subject to freedom of information regulation. As the use of computers by the federal agencies increased so did the number of court cases involving unattended requests of access to computer records (Splichal & Chamberlain, 1994). The definition of "agency's records" became one of the main points of contention. FOIA provided no clear answers to the question, placing the people's right of access in a morass. For more than two decades the issue was left in the hands of the courts. Several landmark rulings mandated the disclosure of public electronic records[18] while others denied it.[19] The stringent policy of federal agencies finally stirred reaction from the media, civil liberty organizations and members of Congress. In late 1980s, Congress held public hearings on the topic and new legislation was advanced in the early 1990s to tackle the problem of secrecy of computerized records.

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[17] Branzburg v Hayes, 408 U.S. 665, 684-85, 1 Media L. Rep, 2617, 2624-25 (1972)

[18] *Forsham v. Harris* 445 U.S. 169 (1980)

[19] Rejected disclosure requests covered variety of topics from records on infant nutrition in low income families and potential health hazards, to computer statistics on convicted murderers receiving parole, CIA records and U.S. Treasury bond records (Halstuk & Chamberlin, 2001:49).
(D.D.C. 31 Oct. 1986).

In 1993, Congress passed H.R.5983 Government Printing Office Electronic Information Access Enhancement Act, establishing a system for the electronic dissemination of federal records. The statute created the GPO Access Gateways program expanding accessibility to electronic information through Internet connectivity at Federal Depository Libraries, and academic and public libraries. The expansion of freedom of information policy for the digital age culminated with the enactment of the Electronic Freedom of Information Act in 1996 (EFOIA).[20] The bill strengthens public access in a number of ways. First, it provides a broader definition of public records, enabling access to any documentation amenable to reproduction, from paper document, tape recordings, photographs, to any type of computerized file such as CD-ROM and diskettes. Second, EFOIA leaves to the requester the decision about the format in which the information should be made available. Third, by providing rules for expedited processing and annual reports to Congress, the Act reduces the opportunities for discretionary interpretation of materials subject to disclosure.

In spite of these important advances in granting the public the rights of access to public information, freedom of information regulation has not completely resolved questions about possession and control of records by government agencies, a crucial issue in defining what information is disclosed to the public (Faiser, 1999). Since the 1980s, proprietary rights have tended to define the nature of public records. The trend is a source of concerns for commentators who see in the increasing privatization of government functions a challenge to the people's right to know (Bunker & Davis, 1998; Davis, 2000). In the name of government efficiency, in the last three decades the federal government has engaged in the massive transfer of public services and functions to private consulting firms. Several modalities of privatization have also been adopted by state governments in

[20] Pub. L. No. 104-231, 110 stat. 3048, amending 5 U.S.C. § 552(f) of title 5

the United States including "contracting out" services to consultants; "load shedding" social programs by transferring their administration to private nonprofit or for-profit firms; or handing direct subsidies to citizens (e.g. educational vouchers and food stamps) so they become "active consumers" and pick the private provider of their choice (Faiser 1999, p.23). Typically, these administrative mechanisms shroud in secrecy important information about government functions.

The reform of freedom of information policy to include computerized and electronic records took place amidst national debates about the development of the country's advanced telecommunication infrastructure – the National Information Infrastructure (NII) – and the design of regulation that could harness growing trends towards the convergence of telecommunication, cable and broadcasting industries. These debates that culminated with the passage of the Telecom Act of 1996 marked a significant departure from previous regulatory frameworks, bringing about new conceptions about the public interest, the role of the state, and desirable outcomes of private action (Aufderheide, 1999; Mosco, 1996). Existing conceptions and regulation of public access to communication and information systems underwent significant transformation in the 1990s. The next section discusses the redefinition of public access regimes during this transition as reflected by the NII-Initiative *Agenda for Action*.

2. PUBLIC ACCESS REGIMES IN TRANSITION

It is important to bear in mind that the transition of traditional public access regimes towards an entirely digital communication environment has taken place amid several waves of deregulatory reform that since the 1980s have redrawn the map of U.S. communications (Aufderheide, 1999; Horwitz, 1989). As discussed earlier, communication regulation of the first several decades of the twentieth century was inspired by classical liberal principles that sought to protect free markets through

legislation that balanced the interests of consumers, industry and labor. Promoting commerce in a stable market environment while attending to social goals justified the enforcement of common carrier and universal service regulation of telecommunication services, the implementation of rules for the dissemination of local and political views on broadcasting networks, and the creation of PEG channels on cable systems. Many of these prior advances of public access regulation perished or have been transformed in the past thirty years with the acceleration of trends towards deregulation.

Lowering entry barriers between various lines of businesses, deregulatory reform considerably reduced government oversight in the name of economic efficiencies and competitive markets. In this context, the state receded from its regulatory role as grantor of affordable access and fair competition, to fully embrace its function as facilitator of free markets conducive to higher industry profits, technological progress and economic growth (Horwitz, 1989; Schiller, 1999). As Mosco (1996) explains it, deregulation should not be confused with simple removal of government oversight. Rather, it involves the spread of market-driven interventions that prioritize industry and economic goals. Deregulation also translated into direct attacks against notions of public interest as a redistributive mechanism, and as an enabler of diversity of voices. Instead, policies heralding competition, innovation and consumer choice took center stage. Regulation promoting the adoption and diffusion of ICT has largely responded to this rationale. The National Information Infrastructure Initiative of 1993 reflected this spirit, laying out the foundations for the development of public policy on new media technologies for the following decades.

The idea to build a national, high-capacity computer network – an "information superhighway" – was part of the electoral package offered by Bill Clinton and Al Gore in the 1992 election. In December 1993 the promise was transformed in the NII-initiative, a

government's call for the creation of a network of networks where "information, communication and entertainment would converge to promote economic prosperity, competition and innovation" (IITF 1993, p.3). The assumption was that this universal network should primarily develop as a private initiative under the auspices of state action. There was also a great concern for ensuring that the NII would emerge as a central hub of the evolving global information networks that function as the backbone of global competitive markets. Keeping the U.S. leadership in the global economy demanded opening up markets overseas though standardization of technological standards worldwide. To fulfill these goals, the Clinton-Gore administration created an Information Infrastructure Task Force (IITF), chaired by the secretary of commerce to coordinate federal government activities, and an Advisory Council to involve the private sector directly in the process.

As a national policy initiative, the NII was the first government forum for framing regulatory and common understandings of digital media technologies, identifying economic and social problems addressed by these services, and the potential benefits derived from them. In the NII *Agenda for Action*, the government resolved to work with all other levels of governance – state, local and community – to promote: 1) private sector investment; 2) universal service, "to ensure that information resources are available to all at affordable prices"; 3) technological innovation and novel applications; 4) seamless, interactive, user-driven operation; 5) information security and network reliability; 6) improved management of the radio frequency spectrum; 7) protection of intellectual property rights; 8) coordination with national and international governmental bodies to support the emergent NII and the Global Information Infrastructure (GII); and 9) access to government information and improve government procurement (IITF 1993, p.6).

The *Agenda for Action* identified Internet access at public institutions such as libraries, schools and health centers as desirable venues to connect the public to the NII, bringing the benefits of the information superhighway to all Americans. The selection of these institutions did not respond to universal service goals. Instead, promotion of innovation and access to public information were the basic principles invoked to justify federal programs that since 1994 had funded projects to provide Internet access at public institutions.

2.1 Access to the NII: People's right to access the marketplace

The *Agenda for Action* framed lack of access to ICT as an emerging threat and as a sign of new social inequities in the information age. State action was justified "as a matter of fundamental fairness" since the country could not accept "a division of our people among telecommunications or information "haves" and "have-nots" (IITF 1993, p.7). Such divisions would prevent citizens on the wrong side of the divide from getting access to information-related jobs, education, telemedicine, and electronic democracy. Considering that legislation should address "the information needs of the American people in the 21st century," the *Agenda for Action* called on Congress, federal agencies and interest groups to revise and broaden the concept of universal service to grant to Americans "easy, affordable access to advanced communications and information services, regardless of income, disability, or location" (IITF 1993, p.5). While these deliberations would take place, the *Agenda for Action* offered some immediate prescriptions for the problem of uneven access to ICT. These policies advanced a new notion of public access as a vehicle to generate "innovations for the marketplace" (p.6)

The NII-initiative established a matching-fund program under the coordination of the National Telecommunication and Information Administration (NTIA), agency of the Department of Commerce, as a mechanism "to promote technological innovation and the

development of beneficial public applications" in the fields of "education, health care, manufacturing, and provision of government services" (IITF 1993, p.8). Eligible entities included state and local governments, health care providers, school districts, universities, and other non-profit entities interested in developing "demonstration projects" that featured new applications of the technology. Under this framework, Internet access at public institutions served two purposes: 1) to attract private-public investment in the NII; and 2) to encourage the diffusion of the technology by showcasing innovative applications.

The *Agenda for Action* also called for the improvement of electronic accessibility of government records through the public library system. Invoking Jefferson's vision of "information as the currency of democracy" (IITF 1993, p. 10), the document pointed to the public library system as the main hub enabling citizens' access to the electronic government via the Internet. The assumption was that public libraries – as institutions historically designated to provide equitable access to information sources and services – would be better equipped to deal with public demands beyond mere connectivity (Kahin, 1995). Plans to enhance citizen access to government information included upgrading the infrastructure for the delivery of government information, and to create interactive applications though which citizens can communicate with the public affairs departments of government agencies.

Although the wealth of the Internet resides in both its information and its communication capabilities, the federal government promoted a notion of public Internet access as a vehicle to spur innovation, and as a system to distribute public information. This diffusionist and information-service approach to access framed the trajectory of public Internet access policies in significant ways. On the one hand, IITF working groups and NTIA programs carrying out these projects in the following years focused on how

federal policy could meet state, local and private initiatives to ensure that designated institutions, particularly public libraries and educational institutions could connect to the Internet. On the other hand, the notion of public access as a mechanism to spearhead innovation was linked to ideals of inclusion and participation in the digital economy and the electronic democracy. To summarize, the NII rhetoric set the foundations for the emergence of a third public access regime, one mostly concerned with innovation and economic development goals, and inspired by universal service principles that seek to reconcile commercial and public interest concerns by promoting the diffusion of advanced telecommunication services, and by supporting specific technological applications at designated public institution. This new conception of public access was sanctioned into law through the passage of the Telecommunication Act of 1996.

3. FRAMES OF FEDERAL POLICIES ON PUBLIC ICT ACCESS

The Telecommunication Act of 1996 was intended to address the evolving media landscape in the U.S. in the context of technological convergence (Aufderheide, 1999). The statute eliminated many traditional boundaries that historically separated broadcasting, cable and telecommunication systems, abolishing local telephone monopolies, and allowing greater cross-ownership and concentration. However, the Act preserved the divisions that established different access regimes for communications media and delivery systems. Following existing rules in the telephone business, telecommunication services[21] were placed under common carrier regulation while cable services were exempted from such provisions because they are considered "information services" or services with "enhanced value" added by the provider.[22]

[21] Telecommunication services are defined as mere transmission of "information of the user's choosing, without change in the form or content (47 U.S.C. § 153 (43), (46) Supp. IV 1998)
[22] Ibid.

The distinction between telecommunications and information services has become one of the main sources of contention in debates about the rules that should govern access to high-speed services. In practice, this duality has meant that providers of DSL services – which run over phone lines – must follow common carriage rules, while cable operators who sell broadband services would not. Enforcing interconnection and interoperability, common-carriage rules assert principles of openness and neutrality of digital networks but cable providers did not have to conform to these rules. Even more, cable operators have successfully argued that municipal access requirements violate their speech rights and hinder their ability to control communications over their systems[23] (Stein, 2006). Seemingly technical disputes before the FCC and courts about the unfair application of this double standard for access have favored the definition of broadband services as information services.[24] Internet service providers, for instance, have avoided common carrier regulation by claiming the status of information services, arguing that their service involves extra computer processing steps necessary for data transmission and store-and-retrieve functions (Lister, 2000). Since the passage of the 1996 Telecom Act, the FCC has instituted the practice of establishing the regulatory status of new services on a case-by-case basis.

The 1996 Act did not expand public access provisions either in broadcasting or in cable. Public access to broadcasting remained the option of broadcasters and was limited to opportunities for expression by political candidates.[25] Meanwhile, the hybrid access

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[23] Comcast Cablevision of Broward v. Broward County. 124 Federal Supplement 2d. 685. S. D. Fla. 2000.
[24] The FCC has categorized cable Internet services as an information service. The Supreme Court has ratified the FCC categorization in National Cable and Telecommunications Association v. Brand X Internet Services 125 Supreme Court Reporter 2688, 2005. For a discussion of tenets behind Brand X's decision see Rich, J. Steven (2006) Brand X and the Wireline Broadband Report and Order: The Beginning of the End of the Distinction Between Title I and Title II Services Federal. *Communications Law Journal 28*, pp. 221-244. For a discussion of implication of some of the most relevant cases for the definition of speech rights online, see Stein (2006, 98-105).
[25] Pub. LA. No. 104-104, 110 Stat. 56 (1996) SEC. 315. [47 U.S.C. § 152, 315]

system of cable was preserved, giving PEG channels the status of mere contractual agreements between providers and municipalities for the use of the public right-of-way. PEG rules partially recognized editorial rights of cable operators to censor obscenity, indecency, or nudity in public-access content.[26] Nonetheless, the statute sanctioned important changes in common carrier regulation, introducing and expanding the concept of universal service by including a mandate to extend access to advanced telecommunication services at public institutions.[27]

Universal service was probably the most significant social aspect included in the Telecommunication Act of 1996, a statute mostly concerned with the promotion of economic efficiencies, deregulation, competition and innovation (Aufderheide, 1999). As a government policy aimed at promoting affordability and availability of phone services, universal service has historically held two roles: one, as a government program that subsidizes services provided to low-income households and high-cost rural areas; and the other, as a funding mechanism that transfers millions of dollars to providers servicing these target populations and areas. During the deliberations leading to the passage of the Telecom Act, Congress was confronted with the dilemma of devising new mechanisms to fund the aggregate cost of fulfilling these two roles, bringing ICT services to all. Faced with increasing industry demands that conflicted with equity concerns of public interest groups, Congress formulated a middle-ground solution. Marking an historical departure from previous conceptions of universal service, the Act created a dual standard, distinguishing between universal availability of basic telecommunication services such as the telephone at home, and the provision of "advanced telecommunication services"[28] to educational institutions, libraries and health care facilities. A universal service fund was

[26] SEC. 611. [47 U.S.C. § 152, 531]
[27] SEC. 254. [47 U.S.C. § 152, 254].
[28] The FCC defines advanced services as synchronous transmissions at greater than 200 kbps.

created to subsidize providers offering high-speed services at a discounted rate to public institutions such as the e-rate program which has provided direct subsidies for Internet connectivity of schools across the country. Defined in such terms, universal availability of ICT at public institutions has been deemed essential to education, public health and public safety. This vision translated into public access policies that mixed the traditional rhetoric of universal service as an enabler of people's access to the marketplace with notions of public education, access to information and job skill development.

Under the universal access framework, ICT access at public institutions has been regarded as both a mechanism facilitating diffusion of the technology and a substitute for home access. In fact, "public access" does not exist as a principle of telecommunication regulation. ICT access at schools, libraries and rural health facilities sought to enhance the activities of these institutions through technological applications such as access to electronic information and records at public libraries, tele-medicine, and educational uses of the World Wide Web. These activities would promote the adoption of ICT and the development of innovative applications of the technology. The next section discusses how these diffusionist frames were reflected in discourses of federal interventions that supported and promoted public ICT access programs.

3.1. Public ICT access as a response to the digital divide

The diffusionist approach to public Internet access and use was reflected in policy discussions and funding programs addressing the issue of the "digital divide" as a social and economic problem. As discussed earlier, the digital divide arose as a national issue during the Clinton Administration, which initially framed the problem in terms of connectivity with the NII. Early analyses of the evolution of the digital divide by the National Telecommunication and Information Administration (NTIA) of the Department of Commerce stressed the dangers of an increasingly stratified society, divided by

inequalities in ICT access. They portrayed the divide as an issue requiring federal, state, and local policy interventions.

The NTIA "Falling through the Net" reports provided justifications and guidelines for these interventions which included support for public Internet access programs. The term "digital divide" was in fact introduced in 1995 by the first of these reports. The analysis departed from traditional measures of universal service such as telephone penetration, adding indicators on computer and modem penetration. The report framed the divide as the gap in individual, home access to hardware and web connectivity. Categories used in the analysis presented the first profiles of excluded populations as the poor in central cities and rural areas; rural and central minorities; youth and elderly populations; those less educated in central cities, and dwellers of North Central cities and the South (See Appendices). According to the report, "traditional providers of information access for the general public" such as public schools and libraries, and other "community access centers can provide, as least during an interim period, a means for electronic access to all those who might not otherwise have such access" (NTIA, 1995). Access programs at public institutions were conceptualized as "safety nets" that "would complement the long-term strategy of hooking up all those households who want to be connected to the NII" (p.10). This notion of public access as a substitute for home access would be the prevailing vision of federal policy for years to come.

In its 1999 Report "Defining the Digital Divide," the NTIA highlighted that the divide between "information have and have-nots" was widening. However, the evidence suggested that Internet at public places such as schools, libraries, or community centers were particularly well used by people who lack access at home or work. Statistics depicted public access users as those with lower incomes and education levels, members of certain minorities, and the unemployed. The effectiveness of public access programs in

terms of generating economic efficiency and life-long learning was demonstrated by figures showing that Internet users at public spaces employed the technology at higher rates to search for jobs or take courses. According to the report, unemployed persons who access the Internet outside their homes were nearly three times more likely to use public libraries than the national average (NTIA, 1999). While declaring that the technology has become a vital tool for all sorts of daily activities, the NTIA determined that providing public access to the Internet would mainly help disenfranchised groups advance economically, providing them the technical skills to compete professionally in the digital economy. Individuals' choice or "not wanting such access" emerged as a primary reason for not using the Internet.

An important framing shift regarding public Internet access occurred in NTIA's evaluation of the digital divide by 2000. In its report "Toward Digital Inclusion," the agency moved beyond traditional indicators of computer and Internet penetration at the household level, stressing how "individuals" were increasingly connecting from places outside the home employing personal, wireless devices. The report argues that:

> "Person-based information is likely to become an even more important complement to the household-based measures in the future. We are already seeing the emergence of a world where Internet access is mobile, traveling with the individual rather than being a function of a physical place. For years, laptop computers have offered processing power and Internet access to individuals wherever they happened to be – at home, in the office, or in hotels across the globe. Mobile devices, such as personal digital assistants and mobile phones, now offer Internet access anywhere via wireless connections" (NTIA 2000, p.45).

In a framework that highlights the appearance of individual-based connectivity, measures and accounts about the Internet access and use from public spaces literally disappeared. Conflating Internet access at work, school, "other people's computers," library or community center, the report makes unintelligible the basic concept of public access as applied to new technologies. Ironically, the report highlights the importance of

"location" for the quality of the Internet experience: "An individual who uses the Internet at his or her home typically has the opportunity to use the technology more frequently and for longer periods of time than if he or she uses it only at a school, library, or community center" (NTIA 2000, p.45).

At the dawn of the twenty-first century, as the country's Internet penetration moved beyond 50 percent, the Bush administration declared the digital divide officially closed, predicting that remaining gaps would disappear with the natural diffusion of the technology. Government reports presented the U.S. as "A Nation Online," with growing broadband access and Internet use cutting across all demographic groups and geographic regions (NTIA, 2002, 2004). According to the NTIA, seamless connectivity across locations makes it possible for Americans to go online "at work, schools, and libraries, as well as at home. (2002, p.2)" However, Internet access and use "outside the home" is depicted as secondary when compared to Internet use at home by a proportion of the U.S. population (p.39). Only members of households with less than $15,000 a year are most likely to gain access at public libraries, while Internet use at community centers is negligible. Evaluations of the digital divide advanced by the NTIA largely influence programs that in the Department of Education and Department of Commerce reflected a blind faith in a technological fix to bridge social gaps. After a decade of direct support of these programs, many ended between 2002 and 2003, or have narrowed their focus to specific applications of the technology. The next section summarizes the main changes in the orientation of federal programs targeting uneven access and use of new technologies.

3.2. Public ICT access as a tool for economic inclusion

Responding to directives of the NII-Initiative, the Department of Commerce was the first federal entity to fund programs for public Internet access through the NTIA. In 1994, the Agency established the Telecommunications and Information Infrastructure

Program (TIIAP), later called the Technology Opportunities Program (TOP). TOP ceased operations in 2004 when the Bush Administration made no appropriations for technology and science programs in that year for the Department of Commerce and Department of Education, while significantly increasing spending on research and development projects in the Department of Defense and the Department of Homeland Security (E-Week 2004, February 23).

During its decade of operations, TOP awarded 610 grants totaling $233.5 million in direct investment for ICT access projects, and leveraged $313.7 million in local matching funds from state, local and tribal governments, health care providers, schools, libraries, police departments, and community-based non-profit organizations.[29] From its inception and inspired by the diffusionist rhetoric of the NII-Initiative, the focus of TOP was on funding innovative applications of information infrastructure to address community problems in areas such as education and lifelong learning, health care, public services, public safety, and community networking. Community networking was understood as a specific application of computing networks, enabling "a broad range of community residents and organizations to communicate, share information, promote community economic development and participate in civic activities" (NTIA, 2000, March, p.2). Content development, training and software were supported as long as they were an integral part of a strategy for using a newly created telecommunication infrastructure. This action was said to encourage the deployment of broadband infrastructure, services, and applications. With respect to educational information, TOP supported training and learning projects that use network technologies. In health care, the program sought to promote the use of technologies "to improve the efficiency of,

[29] TOP archives. Accessed on August 20, 2005 at http://www.ntia.doc.gov/TOP/legacy.html

effectiveness of, or access to health-related services."[30] Public information applications of ICT included economic development programs; state, tribal, and local government services; community-based services; and other projects that promote self-sufficiency and an improved quality of life. Although the objectives and program description seemed to provide support to a wide range of activities, frame analysis of different waves of RFPs reveals that funding priorities were given to projects that expanded "economic opportunities," "enhance productivity," "increase worker skills," and "create jobs for American workers."

The program evolved considerably in its first years of activities. During the first year, funding focused on demonstration and planning projects, and in 1995 resources were available for access projects as well. Overtime, access and planning grants were deemphasized while demonstration projects of primary application such as public safety were highlighted. In the last three years of its existence, TOP encouraged the development of projects that use wireless technologies that operate in the unlicensed spectrum, as a way to extend access to high speed services. Other significant changes occurred in 2002 when TOP explicitly designated faith-based organizations as eligible grantees. The decision responded to guidelines of the White House's Faith-Based and Community Initiative, an unprecedented federal policy which assumes that faith-based religious bodies do as good a job of providing social services than many secular agencies, and therefore should be entitled to government funding (Ebaugh et al., 2006).

A similar trajectory is observed in Department of Education programs that sought to develop a national educational technology policy through the Office of Educational Technology (OET). The OET has focused on expanding ICT access in schools across the country. However, in 1999 as a part of the expansion of its vocational and adult education

[30] TOP archives. Accessed on August 20, 2005 at http://www.ntia.doc.gov/TOP/legacy.html

strategy, the OET launched the Community Technology Center program (CTCP) acknowledging the role of community-based organizations in expanding learning services beyond schools. With the mission of expanding adult education and family literacy through technology, the CTCP stressed the adoption of ICT applications that supported basic and secondary adult education, pre-GED programs and English language proficiency classes. The benefits of these projects were framed as pre-employment and employment skill development, and as a holistic approach to education by promoting parenting skills and parental support of children's education. Community-based organizations eligible for CTCP grants included state and local education agencies, higher education institutions, foundations, libraries, museums, public and private nonprofit organizations, and for-profit businesses that served disadvantaged residents of economically distressed urban and rural communities. Mirroring the TOP experience, in 2002 CTCP explicitly designated faith-based organizations as eligible grantees. Between 2000 and 2005 the CTCP awarded $177 million. Funding was reduced by 80 percent in the last two years of the program until no appropriation was made for the 2006 fiscal year. Since 2002, the OET has turned its attention back to schools, implementing policy and grant programs in support of the No Child Left Behind initiative.

The end of the TOP and CTCP signaled an important departure in federal policies for expanding ICT access. On the view of federal administrators, having attained universal availability of Internet services at designated public institutions, and given the shift towards personal, mobile Internet access, the rationale for supporting access programs ended. Since 2003, the early diffusionist approach to ICT access has been replaced by market-driven access policies that increased incentives for private businesses to engage in the provision of wireless broadband services in public places. The expansion of the Unlicensed National Information Infrastructure (U-NII) in 2003 as a strategy to

meet universal broadband goals illustrates these trends and their far-reaching impact on public access policy.

3.3. Public access as creator of new markets

The U-NII arose in 1997 as an extension of the NII with two goals: 1) "to support the creation of new wireless local area networks (WLANs)"; and 2) "to facilitate access to the information highway."[31] The U-NII was devised as an incentive for the development of the U.S. wireless and computer industries through the expansion of national and global markets for these products, and as a low-cost solution to last mile deployment. In line with NII rhetoric, the FCC Report and Order that created the U-NII identified libraries, schools and rural health among the beneficiaries of the decision. Educational institutions, for example, could form "inexpensive wireless computer networks between classrooms, thereby providing cost-effective access to an array of multimedia services on the Internet."[32] The U-NII was also welcomed by those who interpreted it as the result of a happy marriage between commerce and public interest goals through the creation of the "spectrum commons" (Benkler, 1998; Lessig 2002). As a communal form of property, the unlicensed spectrum is open to anyone who owns devices enabling access to the frequencies designated for unlicensed use. Thus, actual regulation of the U-NII takes place through the "smart technology" that enables wireless communications to avoid interferences. Regulation is also shaped by the "rules of access" that users and architects of WLAN devise to share and administer the resource (Buck, 2002). The emergence of the model of commons or open access through the nation's airwaves has spurred renewed visions of a "radio revolution" that would bring ubiquitous

[31] Amendment of the Commission's Rules to Provide for Operation of Unlicensed NII Devices in the 5 GHz Frequency Range, 12 F.C.C. 576 (1997) (Report & Order) (amending 47 C.F.R. pts. 1, 2, & 15) Available at http://www.fcc.gov/Bureaus/Engineering_Technology/orders/1997/fcc97005.txt
[32] Ibid

broadband services, enabling myriad innovative applications, from communication through adaptive mobile phones, to personal broadcasting networks, and interoperable public safety networks (Werbach, 2003)

In June of 2003, the White House issued a presidential memorandum, launching a Spectrum Policy Initiative to harness the potential of the digital spectrum to support commercial services and critical government missions. In this opportunity, access goals were not part of the agenda of the federal government. Instead, spectrum reform was primarily directed to: 1) "foster economic growth;" 2) "ensure national homeland security;" 3) "maintain U.S. global leadership in communications technology development and services;" and 4) satisfy the country's needs in areas such as "public safety, scientific research, federal transportation infrastructure, and law enforcement" (White House, 2004). Following these policy directives, in November 2003 the Bush administration almost doubled the space designated for the use of unlicensed devices. Contrary to the NII-Initiative of the early 1990s, the recent expansion of the U-NII did not contemplate the use of new technological capabilities for extending equitable access, promoting education, and improving information and government services. The decision stemmed from an industry petition to accommodate growing demand for unlicensed WLANs. Sales of WLAN equipment in the national market had grown 150 percent between 2000 and 2003. Manufacturers were eager to standardize the technology and to take advantage of opportunities in global markets.[33] An FCC Report and Order provided an additional 255 MHz of spectrum for unlicensed wireless devices operating in the 5 GHz region."[34]

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[33] The decision was reflective of the U.S. proposals for the 2003 World Radiocommunication Conference (WRC-03), adopted as ITU resolution WRC-03, which harmonized the spectrum available for U-NII devices throughout the world.

[34] Revision of Parts 2 and 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (U-NII) devices in the 5 GHz band. FCC 03-287. ET Docket No. 03-122 RM – 10371 Available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-03-287A1.doc

The opportunities opened up by the unlicensed spectrum to extend access to broadband services were recognized in 2004 when the White House identified wireless technologies – from wireless fidelity (Wi-Fi) to Wi-Max – as crucial components of "a new wave of American innovation" that would pave the road toward "universal broadband access by 2007" (The White House, 2004). Policy directives to attain this goal included tax breaks to broadband suppliers, removal of regulatory barriers for wireless firms, and promotion of wireless broadband services at commercial locations. Different from access policies of the past that designated public and non-profit institutions as diffusers of new technological applications, access policies through the unlicensed spectrum highlighted how private enterprise could help to extend high-speed access by offering broadband services to "consumers" at "hot-spots" in restaurants, hotels, airports and other public gathering places (12). The underlying assumption of this policy is that the public interest is best served through the workings of free, competitive markets. The role of public institutions as promoters of innovation is totally ignored. Instead, the diffusion of high-speed, wireless communications is better achieved through the actions of commercial organizations that offer their services to consumers. This market-driven approach to access policies has catalyzed a vision of individually-driven, widespread, ubiquitous, and easy Internet access through wireless personal devices. The market's ability to provide equitable access is unquestioned. In the world of wireless broadband, access has been transformed into a matter of individual choice, reflective of one's preferences and lifestyles.

Beyond the free-market rhetoric of federal policy initiatives, municipalities and communities around the country have mobilized to take advantage of the opportunities opened by the unlicensed spectrum, employing wireless broadband technologies as a last-mile solution, and as a platform for community and local government applications.

Justifications for these actions can be found in the problematic reality of the U.S. broadband market. Since 2000, the Federal Communications Commission has reported steady advances of broadband deployment in the country.[35] However, the agency recognizes that the service is not yet ubiquitous, the relative cost of deployment remains high, and the adoption is advancing slowly.[36] The problem is particularly acute in historically underserved areas. Empirical studies have documented the gap in the availability of high-speed services between rural regions and metropolitan zones as well as the slow progress of competition in those environments.[37] The latest reports on broadband adoption show that despite its widespread availability, less than half of the adult American population subscribes to the service. This state of affairs is reflected in reports that have recently shown the U.S. sliding down to 16th place in international rankings of broadband penetration.[38]

In response to these problems, municipal wireless has become an important trend in the last four years, showcasing wireless broadband solutions as part of economic development projects, public safety plans, smart growth ventures and digital divide initiatives (Barranca 2004, April; Gillett, 2006; Lehr et al., 2004; Scott et al., 2005, February). However, the active role of localities in the rollout of high-speed infrastructure and services has found resistance in state legislatures, which regard local ventures as a threat against the development of competition and private initiatives in the broadband market. Long before the advent of wireless broadband, state governments have played a

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[35] Reports on the Availability of High-Speed and Advanced Telecommunications Services. Available at: http://www.fcc.gov/broadband/706.html.

[36] FCC Strategic Goals: Broadband. Available at: http://www.fcc.gov/broadband/Welcome.html

[37] See Oden, M., Strover, S., Inagaki, N., Arosemena, G., & Lucas, C. (2002). *Links to the Future: Information and Telecommunications Technology and Economic Development in the Appalachian Region*. Report to the Appalachian Regional Commission; and Strover, S. (2002). *The Prospects for Broadband Deployment in Rural America*. Paper presented to the 30th Telecommunication Policy Research Conference, Alexandria, VA.

[38] See "ITU Broadband Statistics for 1 January 2006." ITU Strategy and policy unit weblog. Available at http://www.itu.int/osg/spu/newslog/ITU+Broadband+Statistics+For+1+January+2006.aspx

leading role in regulating the telecommunications infrastructure. This responsibility was considerably enhanced by the Telecommunication Act of 1996, and by courts that have asserted the right of the states to preempt municipal involvement in telecommunication services.[39] The Act entrusted state utility commissions with the responsibility of promoting deregulation and competition in the local markets. States have responded by creating policies that remove entry barriers for new competitors, and provide incentives for the deployment of broadband infrastructure (Rajagopal & Berquist, 1999). However, tensions have arisen from diverse and contradictory interpretations about the role of localities, the state and private sector in this endeavor.

A main source of these tensions has been the action of vendors and new businesses that have eagerly mobilized to secure an advantageous position in a competitive telecommunication market. Increasing claims and lobbying efforts of traditional and new broadband providers have created new dilemmas for state legislatures and regulatory authorities (Rajagopal & Berquist, 1999). In some states, cities have been encouraged to develop infrastructure as public utilities or in partnership with private firms; however, municipal involvement in deployment of broadband networks has been rejected or discouraged since the mid 1990s in a number of states, including Arkansas, Florida, Missouri, Nevada, Virginia and Texas (Strover & Berquist, 2001). Although in the latter cases, cities and regions have been left virtually powerless to control their communication infrastructure, many of them have grown in means and awareness about the importance of developing ICT infrastructure, services and industries to secure a successful insertion in the global information economy.

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[39] In Nixon v. Missouri Municipal League et al., 541 U.S. 125 (2004) the Supreme Court upheld a statute of the state of Missouri that prevent municipalities "to provide or offer for sale, either to the public or to a telecommunication provider, a telecommunication service or telecommunication facility" (Strover & Mun, 2006)

Historically, cities have served a functional purpose, acting as distribution mechanism of resources and innovations that enable economic activities. In the information economy, knowledge generation and information processing increasingly depend on the capacity of local social and physical networks that facilitate synergies of these processes (Castells, 2002). That is why milieux of innovations or technopoles rely on the ability of cities to develop an innovative role in finances, business services, media and cultural industries (Castells and Hall, 1994; Florida, 2004). Capitalizing on liberal and libertarian ideals of autonomy, individuation and self-determination, municipal ICT initiatives that cater to global market dynamics have flourished under the sponsorship of computer, telecommunication and media firms that see their interests represented in the promotion of the infrastructure and workforce needed for their development. They argue that this is better achieved through projects that involved public-private partnerships where local administrators stand as facilitators of the working of free markets.

Another tradition of municipal telecommunication development emerged from localities dissatisfied with the service they were provided and that have decided to venture into creating utilities of their own or subcontracting these services. These projects embody communitarian aspirations mixed with localism and social libertarian ideals that regard municipal telecom projects as the expression of the communities they serve. Building on the experience of the 1970s and 1980s that extended access and government services through cable infrastructure, since the early 1990s many municipalities around the country rapidly have mobilized to build high speed fiber networks (Strover & Mun, 2006). The seeds of these local efforts have grown strong over the last decade and are now manifested in blooming municipal telecommunication projects elsewhere. Between 2000 and 2004, the number of publicly owned municipal or county-wide electric utilities that provide some form of telecommunication service has almost tripled (Guillett, 2006).

In only one year, from 2004 to 2005, municipal wireless deployments doubled in the U.S. (Esme Vos, 2005, July). From one tradition to another, municipal involvement in ICT infrastructure and services has flourished and seems unlikely to go away.

Over the last three decades, localities have developed know-how, expertise and particular understandings of how the technology can serve their social and economic needs. Their access policies have gone well beyond the primary mandate to administer the public right-of-way. Municipal initiatives in support of public Internet access have sought to expand government information and services, educational and economic opportunities for citizens and new prospects for community building. The following sections explore the contours of the tensions between state and municipal government policy on access by examining how the state of Texas and the City of Austin have conceptualized public access to ICT through policies and programs enacted in the last ten years.

4. FRAMING ACCESS AT THE STATE LEVEL: THE CASE OF TEXAS

Texas is recognized in the literature as a pioneer state in telecommunication deregulation in the United States (Strover & Berquist, 2001). Sanctioned in September 1995, a year before the federal Telecommunication Act of 1996, Texas House Bill 2128 also known as the Public Utility Regulatory Act (PURA) fully embraced the goal of creating a competitive telecommunication marketplace by abolishing local telephone service monopolies. Cable companies and long distance carriers were allowed to enter the local telephone markets, while local telephone companies were permitted entry into cable markets. It was expected that competition would keep rates down and support the diffusion of advanced telecommunication services, such as high-speed Internet access. While blurring the lines of several industries and market segments in local markets, the Texas bill restricted “direct or indirect” involvement of municipalities in the provision of

telecommunications services (Rajagopal & Berquist, 1999). The market was regarded as more effective than local governments in addressing communities' needs for advanced telecommunication services. Municipal involvement is presented as an obstacle to market-led progress, posing unfair conditions for the operation of private firms.

In order to promote private investment in network upgrades and broadband capabilities, legislators devised financial incentives for firms interested in building telecommunications infrastructure to connect public entities. To that effect, PURA created a new agency, the Telecommunications Infrastructure Fund (TIF) that would award grants to public institutions on both a competitive and non-competitive basis, acting "as a catalyst and supporter of public access to an advanced communication technology network" (TIFB, 1997). Under the TIF mandate, public Internet access in Texas was born as an infrastructure development initiative to support private involvement in the market of broadband services. The TIF-administered grants were funded by an assessment — 1.25 percent of taxable telecommunications receipts — on wired and wireless telecommunications providers passed on as a charge on consumers' bills. The fund's investment exclusively targeted "eligible entities" defined by law as public school districts and campuses, colleges and universities, libraries, academic health centers, and public or not-for-profit healthcare facilities. TIF was required to give priority to educational projects, and to those in rural areas. The grant monies could be used to provide equipment, wiring material, program development, and to cover the installation costs required to establish broadband telecommunications services.[40] Framed in such terms, policies implemented through TIF programs have been characterized as a technology-push effort common to interventions, which assume that by assuring connectivity, communities gain effective access (Strover, Chapman & Waters, 2004)

[40] V.T.C.S., Utility Code, Sec. 57.046.

Between 1996 and 1998, the TIF Board focused its grant activities on the four types of eligible entities (schools, higher education institutions, libraries, and healthcare providers in rural areas), giving priority to infrastructure development for K-12 schools and rural institutions (TIFB, 1997 July). This special focus on educational institutions and on rural areas underscored the assumption that the technology would be best employed for educational purposes, and as a tool to bridge existing gaps along the urban rural continuum. A fifth special program, the Discovery Grants, was established in 1998 to fund "innovative applications of the technology" (TIFB, 1998, June 18). The decision was the first attempt of the TIFB to open the spectrum of its mission, moving beyond funding infrastructure to support research and development of new applications.[41]

While the original goal of TIF was "to wire" Texas schools, libraries and medical facilities, it became apparent that these institutions were often located in communities where broadband services were mostly unavailable. In the throes of becoming a statewide agency, the TIF faced increasing criticism for its "stovepipe networking" approach to infrastructure deployment, channeling funds to enable high-speed Internet connectivity within the four walls of designated institutions but leaving the rest of the community with no broadband access. By the end of the third year of operations, grant administrators had become aware of emerging disparities and potential duplication of funding efforts from sources such as the federal and state Universal Service Funds and federal technology programs, mainly benefiting well-established and larger institutions.[42] These imbalances were more evident in grant programs targeting schools and higher education institutions which tended to allocate resources among the highly stratified educational system prevalent in the state. Many schools were not willing or able to "share" their newly

[41] Interview with TIF executive staff, June 30, 2003.
[42] Interview with TIF executive staff, June 30, 2003.

gained technological resources by opening extra-hours to the public while rural public libraries and healthcare centers were only open for few hours during the week. With the exception of library equipment, most of the equipment funded by TIF was used by staff of these facilities, not by the public.[43]

There were also concerns about the role of vendors in shaping these outcomes. Since funding opportunities depended upon an institution's own initiative to apply for TIF grants, institutions in remote areas and those with fewer means had less information and fewer opportunities to access TIF resources. Catering to the needs of smaller institutions, vendors started offering grant-making services to institutions that lacked expertise to complete the TIF application process. Municipalities and local telecommunication officials were among the first to raise the flag against TIF's potential discriminatory practices. For instance, the City of La Grange's Telecommunication Committee filed public comments urging TIF to revise its grant programs, and devise mechanisms to encourage large institutions to extend their technological resources beyond their wall and into the communities by creating "community networks that recognize interrelationships among educational, medical and library functions" (TIFB, 1997, p.77).

To address these concerns, TIF launched the Community Network Program (CNP) in 1999. The CNP's stated objective was to build technological resources that promote economic development, engaging citizens in the process of developing community through public ICT access. However, an implicit goal of the program was to leverage resources of other technology funds, programs and existing telecommunication infrastructure by bringing together TIF-eligible and non-eligible entities.[44] As explained

[43] Ibid.
[44] Interview with TIF CN administrator, June 07, 2003.

by a TIF grant administrator, one of the main criteria to be awarded a CN grant was "to express the intent to network public institutions and to improve the exchange of information and resources among them."[45] Under the CN program technological networking of public institutions became a proxy for public access. While attempting to achieve administrative and technical efficiencies, the CNP paid less attention to creating conditions that promote effective social networking and citizens' involvement in these projects. From 2000 to 2003, the CNP completed three rounds of grants. The next section summarizes the main frames and administrative criteria that guided the CNP during its short existence.

4.1. Institutional networking as a proxy of public access

The introduction of CNP to the TIF funding portfolio in 1999 marked a departure from the traditional rhetoric employed by the agency to describe its programs and activities. Between 1996 and 1998, TIF highlighted "universal connectivity to the NII" as a key strategic objective to ensure Texas "competitive advantage in the new economy." Widespread "infrastructure deployment" appeared directly related to economic incentives derived from citizens' participation in the information economy (TIFB, 1997). By the time of the CNP's creation, TIF's focus on the promotion of telecommunication markets shifted toward a more socially oriented rhetoric that underscored how "technological applications" such as distant and online education and telemedicine help institutions to address "community needs" for affordable, accessible and quality education, workforce development and dependable health services (TIFB, 1998). The design of the first CN's RFP reflected this strategic vision, awarding on a competitive basis an average of $500,000 to pools of agencies that created public access sites, design training programs, and create online content to fulfill community needs for quality education, economic

[45] Interview with TIF grant administrator, July 3, 2003.

opportunities and workforce development, efficient and accountable government, and quality health services.

In assessing proposals of the first round, grant administrators considered the number of partner organizations, and leveraging of existing resources (i.e. available bandwidth, online sites, and expertise in content creation) a priority.[46] The assumption was that investment in projects with numerous partners would spur and support social networking and community involvement at the local level. A linear vision of technological development also informed the funding process. Administrators saw the existence of public access sites networked through high-speed capabilities as a precondition for the development of training and content creation programs. TIF also faced questions about the legality of funding "know-how" and administrative support rather than technological capabilities. On the ground, CN partnerships demanded coordination and administrative work that partner entities could not afford most of the time. To circumvent this hurdle, the agency allowed grantees to pay vendors for training and managing services. The managerial loop was later transformed into a source of frustration for administrators concerned with growing vendor-controlled implementation of CN projects.[47]

Strover et al. (2004) evaluated the public access programs of 36 Texas communities awarded by the first round of the CN program. They found that the intervention did, in fact, expand public access – 80% of the sites projected were actually established – but the types of location chosen were not intrinsically attractive or available to all target constituencies (p.473). The evaluation indicated that public access was largely equated with expanding computer and Internet access primarily in schools and

[46] Interview with TIF grant administrator, July 3, 2003.
[47] Interview with TIF CN administrator, June 07, 2003.

libraries. The sites chosen were those that represented minimal burdens and deployment demands to participant institutions; new sites and those in areas where the poor and minority population were concentrated were avoided. In many communities, once the project ran out of TIF support, terminals for public access were "absorbed" by the recipient institution and dedicated to administrative and institutional uses. "The very placement, staffing, and use of public access in these projects largely replicated the power structure and access advantages that already were in place," the evaluators concluded (Strover at al. 2004, p.484).

Between 2001 and 2002, TIF issued two consecutive rounds of CN grants incorporating new policy frames closer to the dominant digital divide rhetoric of the late 1990s, and awarding grants on a need basis. These changes should be understood in the context of the TIFB's efforts to overhaul its programs and revamp the agency's original mission. As high-speed connectivity of TIF-eligible entities approached universal levels, the agency was forced to reconsider its original mission, which had been narrowly focused on broadband deployment. TIF also faced increasing public scrutiny and criticism during this period. The agency's lack of experience in administering grants, its low staffing level, and insufficient evaluation tools to ensure the accountability of its programs had translated into extremely low reliability scores in reports of the State Auditor's Office that questioned the agency's performance in fulfilling its goals (SAO, May 2000; October 2002). Facing waning legislative and state support, the TIFB issued a new strategic plan in June 2002, noting that the agency had shifted its focus from funding "boxes and wires" needed for connectivity to "funding training and content," giving people the tools to use the infrastructure and make it relevant to their lives. The new goals would be achieved through public-private partnerships, placing the CN program at the center of TIF funding activities (TIFB, 2002).

These changes in the orientation of CN grants also reflected the orientation and vision of new staff and managers of the program who had joined TIF since 2000. With backgrounds as volunteers of Free-Nets and public access initiatives in the state, and linked to the University of Texas policy forums occupied with digital divide debates over the 1990s, these individuals brought a community technology perspective to an agency that was primarily run by staff with careers as administrators in independent school districts, the state Workforce Development Commission and other state agencies. Due to the presence of these "innovators" in the organization, between 2000 and 2002 TIF staff and some members of the board started to develop a conception of community networks as a broad category of computer use aimed at promoting computer access for the general public and community-based online content. However, by the summer of 2003, the period in which I conducted interviews with leadership, managers and staff of TIF, it was noticeable that not all members of the agency had a clear conception of the goals of the CN program which was still considered 'the newest' TIF program.

Reproducing language of the Federal TOP program, the 2002-CN's request for proposals called for increased public-private partnership in projects that emphasized equitably distributed ICT access employing innovative and low-cost solutions such as wireless networks. Disadvantaged and diverse populations not served by private providers, and those located in rural areas, were made the priority of these $250,000 grants awarded on a need basis. Technological applications supported by CN projects should promote public access, training and content creation that reflect community and local uses for e-commerce, e-government and communications. Nonetheless, the TIF's new vision and programs did not persuade the Texas Legislature. Under growing administrative concerns and state budget cuts, the administration of TIF investment came under fire by oversight agencies based on the agency's perceived inability to develop

satisfactory evaluation mechanisms to demonstrate the impact of its programs. In its report to the 78th Legislature, the Committee on State Affairs highlighted that the TIF had awarded CN or public library grants to almost all counties in the state, but the agency could not provide a comprehensive list of all public Internet access points operating in the state:

> "These grant awards should represent a minimum level of public access to the Internet. Though it is not known how many public access points there are in Texas, it appears that citizens of nearly every county may access a high-speed Internet connection at public locations within their respective counties even if there is no provider of residential or business broadband service in the county…" (Senate Committee on State Affairs, 2003, April, p.51)

In the view of Texas legislators, public ICT access was equated with availability of broadband connectivity in at least one public institution in any given county. In 2003, the Legislature objected to the TIF strategic plan based on the lack of performance measures that could show the agency's progress in completing the goals of its 1998 plan. TIF's need-based funding criteria also became a point of contention with legislators who interpreted the practice as conflicting with the competitive thrust of the TIF enabling legislation. The debates over the agency's future ended in May 2003 when the Governor of Texas vetoed the TIFB appropriation for the 2004 fiscal year, and handed over to the Texas Workforce Commission close-out functions of the TIFB. After TIF ceased operations, the state of Texas did not implement new programs providing assistance to public ICT access. Abandoning its commitment to public ICT access programs, the government of Texas placed the public interest squarely in the hands of the market and commercial providers of broadband services. Competition and availability of infrastructure were held up as superior to the engagement of public institutions and civic organizations in promoting the use and social applications of the technology.

4.2. The end of public access?

The Texas Telecommunication Infrastructure Fund was one of the country's largest state investments in advanced telecommunication infrastructure to connect public institutions to the NII. TIF's original intent was to support the development of the broadband market by offering grants to build high-speed infrastructure that would connect schools, higher education institutions, libraries and healthcare facilities in rural areas to the "information superhighway." Although there are obvious social benefits in externalities derived from investment in public communication infrastructure, PURA's emphasis on infrastructure deployment to promote market goals restricted the development of a vision of public ICT access that would go beyond "availability" of Internet connectivity at public institutions. Development of technological competencies and the degree to which ICT services were effectively made available to the public were secondary concerns in the agenda of the TIF-enabling legislation. While ICT connectivity at libraries, educational and healthcare facilities was framed as a vehicle to extend equitable access, the Texas legislature made institutional connectivity a proxy for community access, privileging institutional functions and applications of the technology. TIF data shows that these frames actually translated into programs that privileged investment in infrastructure and hardware[48] for educational institutions (Table 4). From 1996 to 2002, TIF dedicated only 15% of its investment to libraries and community networks programs which would most likely promote open and wider community access to ICT.

[48] Data provided by TIF indicate that 45% of all TIF expenditures funded desktop and laptop computers. Almost 14% was used to purchase switches, routers, hubs, wiring, and other hardware. About 5 % was used to buy equipment allocated to distance learning. Almost 18 % was dedicated to fund training. Project management expenses represented 17% of TIF investment. About 2 % was spent on fees charged by Internet service providers (ISPs) and telecommunication providers to access the Internet, (Committee on State Affairs, 2003).

Table 4. Distribution of TIF Funds by Program (1996- 2002)

Program	Million ($)	%
Public schools	553.6	55.7
Health care	109.7	11
Higher education	88.2	8.7
Libraries	77.5	7.8
Community Networking	71.5	7.2
Discovery	44.2	4.4
Special projects	51.4	5.2
Total	993.9	100

Source: State Affairs Committee, 78th Texas Legislature (2003)

Faced with administrative criticism and rising demands of municipal governments, vendors and communities at large, TIF devised the Community Network Program as a mechanism to leverage funds and existing institutional resources by promoting collaboration between TIF-eligible entities. From this technocratic perspective, networking of public institutions became a surrogate for public access. Compared to other TIF programs, the CNP provided a wider definition of public ICT access by requiring applicants to create public access sites, training programs and local content. However, the agency's late attempts to redefine its mission and redirect funding from hardware and infrastructure to the more intangible aspects of ICT access perished under the industry-driven logic prevalent in the Texas Legislature which privileged state investment that translated into direct incentives for providers.

Since the closure of TIF, Texas has furthered its market-driven approach to broadband access policies in unprecedented ways. In 2005, placing economic competitiveness of the broadband market as the primary motivation for revising telecommunication legislation, Texas legislators considered new legislation that undercut local authority over broadband deployments that utilize "emergent technologies." House Bill 789 (HB 789) proposed pre-empting municipal involvement in wireless broadband projects while removing local authority over the public right-of-way to facilitate fiber-to-

the-home deployments. After intense lobbying efforts by computer and networking industries, leading stakeholders in municipal wireless projects, HB 789 was defeated in May 2005.

4.3. Dismantling the cable access channel tradition in Texas

However, in September 2005, the Texas Legislature reconsidered some of the anti-municipal provisions and passed Senate Bill 5 (SB 5), the first statewide video franchise law in the United States that abolished municipal controls over new video broadband providers (Haugsted, 2005, September 7). SB 5 set out ostensibly to promote the broadband market and the development of emergent digital video technologies by streamlining the process of assigning a franchise for providers of video-to-the-home services. The statute mostly benefited telephone companies such Verizon and SBC and their plans to deliver Internet television service to the home by exempting them from negotiating agreements with individual cities, as cable companies have done for decades. Superseding municipal franchise agreements, SB 5 undercut guaranteed future operational funds for public access channels, challenging historical protections of public access channels in significant ways. According to the statute, franchise funds are not bound to support local public access facilities. New public, educational and government (PEG) channels will be granted only to cities that meet with minimum population requirements, and after they 'prove' their need for access supplying eight hours of daily programming. These conditions can effectively exclude small towns in rural areas and communities with no built-in video production experience. The bill also removed the power of local government to negotiate contributions of providers beyond those stipulated by law, and to receive claims and act in consumer protection issues.

Although systematic evaluation of the effects of the new law is lacking, there is evidence of negative impacts of this legislation on public access channels in Texas.

Immediately after SB 5 was sanctioned, in October 2005, Grande Communications, one of two video-providers in Austin, opted out of its municipal franchise. The City of Austin estimates that Grande's withdrawal reduced funding for access capital equipment by $2.5 million over what would have been the remaining nine years of its franchise.[49] Even more damaging, in January 2006, Time Warner stopped supporting the San Antonio public access channel after obtaining a state franchise, and only recently agreed not to withhold franchise fees from the city while awaiting the results of a court case challenging the franchise fee provisions in SB 5 (Nowlin, S. 2006, May 2). In April of 2007, the city of Houston announced it would eliminate the operating budget of the Houston public access center, which is no longer guaranteed now that the cable company, Time Warner, has moved to a state level franchise.[50] While corporations launch digital video, mobile broadband, and bundled telecom and video services across the state, Texas communities have been left with fewer means to reassert their rights of access to an increasingly commercialized, convergent media system.

Since Texas adopted a state franchise law, 11 states have sanctioned analogous legislation[51] and many others are considering a similar path.[52] Threatening the sustainability of local PEG channels, statewide franchise laws jeopardize the survival of one of the last institutions that enables the public's access to media technologies. The Texas experience provides important warnings about the threats posed by policies that hinder communities' ability to access digital distribution systems. This market-driven-type of legislation only recognizes access rights of the public as "consumers" of broadband services. The expansion of people's capabilities to produce, gather and

[49] Interview with Austin City official, June 12, 2006.

[50] Interview with ACM Board member, May 22 2007.

[51] States that have enacted statewide franchise legislation include Arizona, California, Indiana, Kansas, Michigan, Missouri, New Jersey, North Carolina, South Carolina, and Virginia.

[52] Currently considering statewide franchise legislation are Florida, Georgia, Illinois, Iowa, Massachusetts, New York, Ohio, Oklahoma, Tennessee, Utah and Wisconsin.

exchange information, speak and communicate through these networks are not supported or encouraged beyond mechanisms provided by the market. Undermining local authority to act on these issues, the current wave of state telecom legislation opens new questions about the sustainability of local public access projects in convergent media scenarios. By examining the evolution of the City of Austin's policies on public access, the next section examines how the capital of Texas has historically justified its support of public Internet access, and how the local government is adapting and responding to increasingly hostile federal and state policy frameworks.

5. LOCAL POLICY FRAMES ON PUBLIC ICT ACCESS

In spite of state regulation banning municipal involvement in the actual provisioning of telecommunication services, the City of Austin exhibits a long-standing trajectory of policy efforts to promote public Internet initiatives, being among the first local governments in the U.S. to invest resources to support the expansion of public computing networks (Servon, 2002). City government action to foster the spread of new technologies finds its roots in three decades of local cable regulation that have made Austin one of the nation's strongholds of public access television.[53] That is why in 1992, in renaming the Austin Cable Commission the Austin Telecommunication Commission, the City Council identified the promotion of the use of public access and the coordination of opinions on telecommunication services issues as the primary responsibilities of its citizen advisory body.[54] The decision was more that a simple change of names. Riding the wave of technological development that transformed Austin into a cluster-based economy of semiconductor and computer manufacturing during the 1980s, the City had grown more aware of emerging trends toward convergence of computer, cable and

[53] Public access television has served the Austin community since 1973. Austin's Channel 10 is the longest continuingly running access channel nationwide.
[54] City of Austin. Ordinance No. 941208-F, amending Art IX, Ch 2-4-115 (1992)

telecom industries. As early as 1992, even before state and federal regulation addressed the issue of media convergence, the City defined telecommunication services as "all transmission of voice, data or video by means of permanent facilities installed in the City's right-of-way,"[55] embracing a vision of technological development through convergent media infrastructure.

Modeled after cable franchise regulation, the City of Austin in 1994 considered pursuing a franchise agreement with Central and South West Communications (CSWC) to build a broadband network to every home, business, and institution in Austin (Berquist & Grant, 1999). However, the process was halted by the municipal restrictions enforced by House Bill 2128 in 1995, reflecting the state's policy determination to reserve such networks for private enterprise. That year, amid local, state and national debates about the deployment of advanced telecommunication infrastructure, the City's vision of new technological development finally translated into the first programs to support public access to ICT. Since then, the City has justified its sponsorship of Internet access programs on different grounds. A review of the evolution of the main policy frames of municipal access policies is useful to identify the rationale and main forces shaping the development of local approaches to public access, and its connections and discontinuities with federal and state level policy.

5.1. Public access to the local government

The City of Austin began its public ICT access initiatives in 1995 as part of its efforts to increase accessibility to electronic government information and services. This foreshadowed a pattern in many places, where digital divide concerns were linked to a desire to implement e-government programs and a fear that access to such programs would be inequitable without some kind of access initiative. Although state legislation

[55] Ibid.

blocked Austin's attempts to develop a city broadband network for businesses and citizens, an alliance of seven public entities including educational institutions and the county government[56] partnered to build a fiber-optic network – the Greater Austin Area Telecommunications Network (GAATN) – to be used only by partner institutions to further the digitization of their businesses. The City of Austin's vision of e-government was largely inspired by the NII-Initiative and EFOIA rhetoric of the time, framing the technology as an information delivery system, and a hub for transactions with the local government. The City regarded public Internet access programs as a component of its public information policy initiative.

In 1994, the City Manager had created a citywide executive team to examine possibilities offered by ICT for the improvement of city businesses. The team reviewed several applications and topics such as GIS use for city planning, enterprise databases, office automation, and Internet access. Sue Beckwith, IT Manager of the Environmental Department, headed the subcommittee that was commissioned to look at the Internet and its applications for effective City governance. In December 1994, the committee issued three recommendations: 1) to create a City website with information and interactive services; 2) to provide Internet access for all City staff; and 3) to initiate and participate in a community-based effort to provide public access to the Internet.[57] In February 1995 the City Manager, Gus Garcia symbolically cut an "electronic ribbon" to inaugurate the City online portal, Austin City Connection, "to bring government closer to the people".[58] As articulated by Becky Gadell, director of Austin City Connect, the city website would become "a clearing house for services, helping residents with everything from re-

[56] GAATN partners include: Austin Independent School District (AISD), Austin Community College (ACC), City of Austin (COA), Lower Colorado River Authority (LCRA), Travis County, The State of Texas represented by the Department of Information Resources (DIR), and The University of Texas at Austin (UT-Austin)

[57] Written communication with Sue Beckwith, October 2004

[58] City of Austin, press release February 22, 1995.

checking their library books to paying their electric bills"[59]. Through its web presence (see Illustration 1), the local government also attempted to materialize its vision of Austin as a bridge with the future economy, "a technology-oriented and innovative city with strong regard for tradition".[60]

Illustration 1. Logo of Austin City Connection 1995

Since its creation, Austin City Connection was supervised by the City's Public Information Office. Several content areas emphasized direct contact with public officials, updates and public information about city businesses, and tips about community and life in Austin. Critical information such as voter registration, location of health clinics and library services at central branches were provided in English and Spanish. Between 1995 and 1998, Austin City Connection became the main arm of the city for the formulation of public Internet access policy.

Following the recommendations of the City's Internet Task Force, Austin City Connection developed activities around three strategic goals: 1) maintaining and expanding the City's web presence to demonstrate the possibilities of the technology; 2) networking all City departments so employees could use the technology to improve their

[59] Interview with Becky Gadell., Available at http://www.awpi.com/AustinAxis/Archive/1/ACC.html. Accessed on October 23, 2004
[60] Electronic archives of the Austin City Connection.

services; and 3) partnering with non-profit and private sectors to catalyze and support universal ICT access for all citizens.[61] Since then, the notion of promoting "universal access to ICT services" has largely justified City support for public Internet services. As explained by a city official, policy action in this arena was necessary "to make government information accessible to all citizens through free computer and Internet access and training." In July 1995, through direct funding for operations and staff, the City sponsored the creation of Austin Free-Net (AFN), a non-profit organization with the mission "to provide Internet-connected computers and training in public spaces for the greater benefit of all residents." Sue Beckwith, former co-chair of the City's Internet Task Force and webmaster of Austin City Connection, assumed the position of Executive Director of AFN.

According to city officials, a partnership with a non-profit was desirable for various reasons. First, the general public would be more open to use information and training services from a non-profit entity. Second, having a non-profit provider of public ICT services would help to avoid possible friction with the Texas Legislation and private broadband providers, who could accuse the municipal government of illegally engaging in the provisioning of public telecom services. Third, a non-profit would be able to apply for grants, engage in partnerships and leverage resources from other stakeholders and organizations, avoiding bureaucratic procedures of the City. Fourth, a non-profit would promote public-private partnerships, opening spaces for citizens' participation in public ICT services. City officials regarded public-private partnerships as a natural path to encourage the expansion of public Internet access in Austin. Since the 1980s, private-public partnerships have become a common strategy to spearhead high-tech projects in Central Texas (Smilor et at, 1987). This mode of action was also in line with the NII

[61] Austin City Connection archives. History of Austin City Connection. Available at http://www.ci.austin.tx.us/connect/story.htm. Accessed on August 30, 2004.

which called for public-private partnership as a vehicle for the expansion of the information superhighway. In 1996, Austin's access model achieved national visibility when the Clinton administration addressed a letter to AFN commending its efforts: "grassroots efforts like yours are vital steps toward the creation of a successful national information infrastructure."[62] Leveraging community and City resources from multiple public-private partnerships, Austin Free-Net brought Internet access to 21 library branches by the end of 1996, which compares very favorably with the limited number of access points typical of the TIF-funded community projects reviewed above. The project was supported by a $234,883 grant from the Texas State Library and Archives Commission, private donations and efforts of AFN community volunteers. From the library perspective, Internet access at its branches would expand the patrons' ability "to access the on-line catalog from home or office," adding opportunities "to discover what libraries have to offer."[63]

The library system was firmly instituted as the main focus of the relationship between AFN and the City in 1998 through the first city agreement for the provisioning of public Internet services.[64] The agreement established that AFN should "provide public access to the Internet and emerging technologies" at libraries by offering "equipment, connectivity and training" to members of the general public, and particularly to "those residents who do not have Internet access in their homes." The agreement detailed network service indicators and the minimum number of terminals to be installed at central locations. In response, the City committed to pay $4,333 in monthly subscription fees for five years (between 1998 and 2003), and to designate two city employees to

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[62] City of Austin press release (August 17, 1996) *Austin community gains access to the Internet with 'Austin Free-Net Connects at the Library*. Available at http://www.ci.austin.tx.us/news/freenet1.htm
[63] Idem
[64] *Agreement for public access to the Internet between the City of Austin, Texas and Austin Free-Net*. February 2, 1998.

serve on the non-profit as full time senior manager, and senior technical support. AFN used the City's subscription fees to pay commercial broadband providers (SBC and Time Warner) for Internet connectivity at libraries. AFN's contract with broadband providers was evidence that the City of Austin had completely abandoned its attempts to develop public telecom infrastructure. As explained by one of the informants, "the GATNN network was for city businesses only, and AFN had to have a contract with TW and SBC to conduct its business as provider of public Internet at city libraries." [65]

The formalization of the relation between the City and AFN marked a turning point in the City's role as facilitator of public ICT initiatives. The administration of the contract and the responsibility for public ICT access policies were transferred from the Public Information Office to the Office of Telecommunications & Regulatory Affairs (TARA). This office, which was primarily responsible for overseeing municipal cable franchise agreements, opened a new program, the Community Technology Initiative which would promote digital technology in Austin through training, grants and technology access.[66]

Through the first city agreement for public access, the local government crafted a narrow definition of Internet access as an information service and e-government tool. Libraries were identified as the primary hub for public connectivity. The public library system became the institutional boundary for ensuring universal ICT access to citizens, in particular to those who lacked home Internet access. Institutional boundaries were used to ensure that public ICT access service would not operate in competition with services offered by commercial providers. Non-profit action was regarded as both a mechanism to engage community actors and a strategy to circumvent restrictive state policy legislation.

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[65] Interview with TARA officer, July 22, 2004.
[66] Ibid

In utilizing City monies to pay for Internet connectivity to broadband providers, AFN favored a commercial infrastructure approach to access issues, reflecting the state's approach of favoring commercial infrastructure and preventing cities from providing it directly.

5.2. Public access as an economic development strategy

Between 1997 and 1999 a great deal of the City discourse on Internet access framed access initiatives mostly as training programs, and as vehicles for inclusion in the new economy. ICT use appeared to be primarily associated with career development, the development of a skilled workforce, and the promise of better paid jobs for participants of training programs. The discursive shift should be understood in the context of the increasingly direct involvement of the Austin business community in public access efforts.

In 1997, TARA staff held regular meetings with members of the City Council and the Telecommunication Commission to discuss the city's role in its newly created Community Technology Initiative. A similar discussion was taking place community-wide. Between 1996 and 1998, the University Of Texas LBJ School Of Public Affairs hosted several meetings with City officials, industry and community leaders on the digital divide. City officials interviewed in this study identified these meetings as very influential in the development of the City's understanding of the problem of ICT access. Building on these internal and public discussions, the City launched in 1997 a Telecommunity Partnership Initiative pursuing four goals: 1) to invest in the development of the local information economy, 2) promote universal access to convergent telephone, computer, and video platforms; 3) promote the interconnectivity of all public networks,

and 4) to leverage community resources through public-private partnership.[67] The TPI engendered a new vision of public ICT access as economic development strategy, and a "catalyst for community and leadership cooperation" to fulfill the vision of "Austin as a great 21st Century American city."[68] In 1998, the TPI translated into a $1.5 million RFP to create a technology-focused workforce development program that would also increase public ICT access, and utilization of these services.

In 1998, a partnership between the Capital Area Training Foundation (CATF, an organization affiliated to the Greater Austin Chamber of Commerce) and AISD/Travis High School was awarded the contract to operate an after-school training and public access program at Travis High School. According to City officials, the main objective of TPI was to create "opportunities for individuals through partnerships with local employers." Although AFN applied for the grant, the City deemed industry involvement more desirable for the long term goals of the TPI. According to the CATF model, City money would cover the cost of equipment, Travis High School would provide the facilities and a captive audience for the program (students and parents), and CATF would ensure specialized training to meet the specific needs of Austin's employers. The program was put in place through the creation of the Community Technology Training Center (CTTC) program, a coalition of private and non-profit organizations that in 1999 was awarded a five-year Department of Education grant to foster "school-to-work" opportunities.

Partners in CTTC included Austin Community College (ACC), the largest community college in the area; the Austin Community Access Channel (ACAC), Channel 10; Austin Free-Net, the main provider of free, public access at libraries and other public

[67] Resolution of the Austin Telecommnication Commission (April 17, 1997) Telecommunity Partnership Initiative. Available at http://www.ci.austin.tx.us/telecom/intelcom.htm
[68] Idem.

spaces; University of Texas, as evaluator of the project; and Knowbility, a non-profit that facilitates IT access for people with disabilities. Although subsequent evaluation of the CTTC found that the program was mainly controlled by CATF with little participation of other partners (Strover et al, 2000; Tufekci, 2003), City officials considered that the strategy was successful in terms of leveraging community resources and government investment for both the creation of new training programs and the support of public Internet access sites.[69] For instance, CTTC ensured funding for staff and two computer labs at the Dewitty Job Training and Employment Center, the AFN's main public access site that is open to all residents of the 11th-12th St. corridor, in the heart of East Austin.

Shortly after CTTC ran out of Department of Education funding in 2003, CATF decided to refocus on its workforce development goals. CTTC was then transformed into Skillpoint Alliance, a non-profit organization that builds partnerships among industry, education institutions, and local government to promote qualified workforce development for Central Texas.[70] Skillpoint caters to ICT training needs of business and industries, educators, adult workforce and K-16 students and parents. The City decided to continue its contributions to the initiative (about $250,000 per year) but the administration of the Skillpoint contract was transferred from TARA to the Economic Growth and Redevelopment Services Office. Between 2003 and 2005, Austin's main ICT training program was transformed into a workforce development initiative emptied of public access goals. Ironically, evidence has shown that CTTC training programs, focused primarily on Microsoft Office skills, with some incidental training in Internet use, did not easily translate into new job opportunities for participants. In a two-year panel study with 23 low-income participants in CTTC's classes, Tufekci (2003) found that only two of

[69] Interview with TARA officer, July 22, 2004.
[70] Skillpoint Alliance's Mission. Available at http://www.skillpointalliance.org/index.php

them were able to find jobs that required office computer skills. However, adoption of the incidentally acquired Internet skills translated "to great personal and civic benefit" among participants of the study through unstructured, open use (p. viii). Nowadays, these benefits of Internet access are not available to all but only to those who sign up for formal training programs offered by Skillpoint.

5.3. Public access as a community building bloc

As explained above, community technology centers have flourished in Austin since 1996, ever since AFN brought Internet connectivity to public libraries. However, non-library, community-based Internet access programs did not receive direct support from the City of Austin until 2001, when TARA awarded the first round of the Grant for Technology Opportunities (GTOPs). Through GTOPs, the City considerably expanded the scope of its public access policy by offering up to $50,000 in matching funds to community-based programs that: 1) increase points of public access to computers and information technology; 2) support information technology literacy, education and training; or 3) encourage information technology application that support neighborhood planning and increase civic participation.[71]

According to city officials, Austin GTOPs was inspired by the city of Seattle's technology matching-fund grant, and the growing visibility of the community technology movement nationwide. This awareness was increased by the City's official exposure to national and regional community technology forums that highlighted the importance of community-based technological applications to spur innovation and support equitable development in low-income and underserved communities. As explained by a TARA staff member:

[71] Austin Telecommunication Commission (September 1, 2000) Resolution establishing a Grant for Technology Opportunities

> "At the beginning we did not know about technology networks. Remember? We were administrators of cable franchises. We knew that public access and universal service are important for community development. First, the city supported public access through Austin Free-Net and the libraries, and then we provided training through CTTC. But we did not know enough about issues of community technology and community media. In TATOA, for instance, some members of our leadership are now more involved in that." (Interview with TARA officer, November 22, 2005)

In 1999, city officers perceived a growing critique from local community technology advocates for the City's emphasis on ICT use for workforce development. In a landscape of flourishing community technology programs, the concentration of City funds for AFN and CTTC initiatives fueled these critiques, calling for dispersion of local investment to ensure that a wider diversity of constituencies and programs would be supported. TARA staff found in the City of Seattle's program a compelling model to support community involvement in public ICT access without fostering dependency on City funding. As explained by a city officer:

> "We often monitor the work that similarly situated cities are doing in policy and technology. Boston, Seattle, Portland are cities we should look at because they are similar to Austin. They are innovative, community-focused, and social-program oriented. Like Austin, they have a strong tradition of public access TV. The City of Seattle and Portland are really out there embracing consumer protection, public access TV and a community technology. The Seattle model emphasizes community contribution through local matching funds. That's ideal. The City promotes community technology and sustainability without creating dependency from City funds." (Interview with TARA officer, November 22, 2005)

Distributed funding and the spread of ICT applications for community activism are the themes of Austin GTOP. Since 2001, the City has committed $100,000 every year to fund diverse projects which include: building computer labs for at-risk youth; hiring instructors to teach the elderly to use computers to communicate with their families; developing camps for 5th-8th grade girls that teach them how to make music videos and build robots; community building through digital media arts; and offering computer literacy education to non-native English speakers. Over the years, the City has increased

the threshold of required matching funds from 25 percent to 100 percent of the grant investment, giving priority to projects with a stronger sustainability base. Other selection criteria have not changed since the inception of the program. The City has delegated the selection of projects to be awarded to a committee comprised of nine community representatives appointed by the Telecommunications Commission every year. Typically, the committee is composed of representatives of neighborhood councils, schools, libraries, community-based organizations, technology professionals and city staff. Through its continued support to GTOP, the City of Austin has demonstrated its commitment to widen access programs through community involvement. This compromise was ratified in 2003, through the second City Agreement for Public Access to the Internet with Austin Free-Net.

In 2003, the City renewed its contract with Free-Net agreeing to pay for the provisioning of public access to technology and the Internet at "community facilities," not libraries. According to the contract, public access services would involve equipment and connectivity, training for users, and technical services for existing City and community public access labs. The City would also have the prerogative of using AFN technical services for discounted rates for its social service contractors and GTOPs grantees. According to City officials, over the last eight year, libraries had achieved complete technological autonomy from Free-Net, and the non-profit services were no longer needed at these facilities. Another reason for the withdrawal was the increasing debt that AFN was accumulating with commercial broadband providers that supplied connectivity for public Internet at libraries. In 2003, the debt amounted to $15,000. Facing a severe decrease of other public and private funding sources, Austin Free-Net had accumulated a significant operational deficit. The library management drew up a plan to connect the public library system to the Internet through the City network, GTAAN.

The process was completed in 2005, and since then Austin Free-Net's main clients have been partner community sites, such as the Rosewood Zaragosa Neighborhood Center and the Austin Resource Center for the Homeless.

5.4. Public access as industry test bed

A new understanding of public Internet access emerged among City officers and administrators with the spread of the public wireless broadband networks in Austin between 2003 and 2005. This new notion of public access connected traditional conceptions of Internet use as facilitator of access to government services with the idea of promoting the use of emergent technologies to enhance technology incubator opportunities in Austin. As I shall discuss in further detail in Chapter Six, this shift should be understood in the context of intense industry efforts to position Austin as an important cluster-economy of wireless technologies in the U.S. Suggesting that increasing public use of the technology could transform Austin into a living test bed for research and development, industry associations shaped local government initiatives in support of public Wi-Fi.

Austinites were early adopters of Wi-Fi technologies, enjoying public broadband connectivity at public spaces like the airport, coffee places and other public locations since 2003. It is difficult to determine the location of the first hot-spot but different sources agree that public Wi-Fi in Austin emerged as a private initiative of commercial wireless ISPs and non-profit users groups. By many accounts, the local government was a late comer to the space of public wireless broadband connectivity. When the City tech team "lit-up" the first City hotspot for public use in March 2004, public Wi-Fi was already recognized as a trend in coffee houses and other commercial establishments in the downtown area. Before its public access application, the technology had been tested and employed by the Police Department for its public safety functions. The City's

Technology Management team also ran tests with the City utility to automate its meters. And several city facilities had started to install wireless access points when the City's Technology Management Office intervened to devise a city plan to create a wireless network for city businesses. According to City officers, the demonstration effect of public access at commercial venues helped launch the idea of partnering with Austin Wireless City Project, the most important non-profit, user-group provider of these services to offer public Wi-Fi access at City facilities.[72]

Extending existing public networks and supporting innovation were the main justifications for city wireless programs. In the initial phase, the City partnered with the Austin Wireless City Project to enable public wireless access at all city facilities, from libraries and public buildings to parks. In the second phase, the City committed $50,000 in annual funding for the Wireless Incubator Program, the most recent development of the Austin Technology Incubator, a partnership of technology industries and University of Texas that since 1984 has spearheaded the creation of new technology clusters in Austin. Although TARA has sponsored public Internet programs since 1997, decisions about the deployment of the City's public wireless network remained in the hands of its technology team. In their view, provisioning of public Wi-Fi services was confined to city facilities only. When asked about the rationale behind the choice, one of the City informants explained that the decision was a matter of "common sense" for the City.

> "… The common sense would be that if I want to use Wi-Fi to serve citizens in a public building, there is nothing wrong about that. But if I want to leverage the City network and go down the block telling 30 businesses that I can provide the service for them, it'd be a problem about setting the limits of what the City can do or cannot..." (Interview with Austin City's technology officer, August 9, 2004)

Although legislative attempts in 2005, to ban muni-wireless projects did not succeed in Texas, the legacy of PURA from the 1990s did succeed in crafting a new

[72] Interview with City's technology officer, August 9, 2004. Interview with TARA officer, July 22, 2004.

"common sense" for local government action. In contrast to Austin's original telecommunication policy agenda of the early 1990s, the current local policy agenda privileges the notion of free markets, minimizing government action in infrastructure deployment while confining City initiatives to the promotion of the private initiatives necessary for the operation of markets. Avoiding friction with private telecommunications companies essentially meant that the city would not deploy public Wi-Fi networks in competition with private broadband services. The city defined the restriction on public–private competition in terms of types of facilities. As a result, the city has eliminated the possibility of using wireless Internet as last mile connectivity beyond city facilities, which includes ruling out extension of the service into underserved areas, such as East Austin, which has few commercial wireless access sites, such as coffee houses (see 2004 map of wireless sites in Chapter 6).

In April 2006, after the completion of the field work for this study, the City of Austin deployed a wireless cloud in the downtown area as a demonstration project for the World Congress of Information Technology. The Mayor announced that the project would remain permanently as a "big gift" of the WCIT and Cisco Systems, which donated equipment valued at $700,000. As explained by City officials at the inauguration of the public wireless mesh, the City expects that the infrastructure would "make Austin a test lab for local companies to test new products" making Austin more attractive to companies (Selden, 2006, April 28). Thus, in the era of wireless broadband, Austin's public Internet access has been redefined as an industry test bed.

6. CONCLUSIONS

This chapter examined the evolution of the most prominent policy discourses about public access to ICT by combining historical analysis of the literature with an analysis of frames in a sample of policy documents that have addressed the issue at

federal, state and local levels. The historical analysis of policy discourses on public access helps to explain the evolution of the main assumptions behind the different legislation that has justified state action to enable people's access to communication and information systems in the U.S. The longitudinal analysis of policy frames on public Internet access is useful in identifying how these different traditions or conceptions of public access have transitioned to convergent media scenarios, and how they have been recrafted by state and local powers in the case of Texas. Against the definition of the justifications for public use of ICT services, one can identify the main assumptions behind the evolving notion of the state's role in public interest regulation, the social function attributed to media technologies, and the several conceptualizations of the public.

Access regulation can be regarded as the various systems of rules governing the rights of entry to information and communication delivery systems. Historically, in the United States these systems have been privately owned. Therefore, access rules also reflect different assumptions about the social relations structured around property rights of the media. The need to regulate different parties' access rights sprung from the recognition of a power imbalance between users and the provider of these services, as reflected by the monopolistic property of electronic communication carriers like the telegraph and the telephone. Access regulation reflected classical liberal principles that sought to support the growth of markets by granting the operation of communication delivery systems easily accessible to everyone. Ever since the advent of the telegraph, the *common-carrier access model* has drawn a close connection between the provision of these services and commerce, privileging a notion of the state as promoter of markets through principles of fair access and universal availability of services. This conception

renders a definition of users as both active agents in the market and consumers of telecommunication services.

A very different set of assumptions has informed the regulation of the press and other media industries. Invoking First Amendment protection, the press has rejected government attempts to craft rules enabling people's access to speak through newspapers, defining such attempts as a violation to the speech rights of the editors. Under this *free marketplace model of access*, it is assumed that private property of the means of communication are fairly dispersed and accessible, thus editors and the public have the same power to make their voices heard. The public is regarded as individuals with equal opportunities to contribute to the public debate through diversity of media outlets. Newspaper owners have succeeded in defining speech rights as a function of property rights of the newspapers' editors. Courts and the FCC have ratified this interpretation, and principles such as the right to reply that increased opportunities for people's access to newspapers were repealed in the 1980s on these grounds.

A third tradition of access rules materialized through the regulation of broadcast media. Acting as trustees of the public airwaves, radio and television networks were given control over oligopoly markets in exchange for the expansion of their services nationwide. Framing electronic media as enabler of markets and democracy, the government established a *trusteeship model of access* through licensees that recognized rights of media owners over the frequencies while demanding spaces for expression of political candidates. Under this framework, electronic media fulfilled ideals of market competition and representative democracy. However, the public's rights to directly engage in the media were not fully recognized.

The first truly public access regime emerged from cable regulation that enabled citizens' participation in the media through public, educational and government channels.

Public access became a distinct rubric in communication policy discourses in the context of intense media activism that during the 1960s recognized the political opportunity opened by regulatory debates about the nascent cable technology. In the world of multi-channel systems the scarcity argument was abandoned and regulators set aside specific channels for public voices. As first formulated, PEG channels reflected the combination of the common-carrier and the trusteeship access models by enabling people's access to cable systems as a mechanism to support principles of free speech, democracy and localism. Public access rules on cable also marked the awakening of the passive audience as active producers of cable access television. Media production came to be understood as another mode civic of activism and an expression of local voices.

In the 1960s, legislation promoting access to public information became another important regulatory framework justifying state action to promote public access. Government channels can be regarded as the materialization of this public access regime that advocates for the people's right to know. However, by codifying the role of the libraries as depositaries and local distributor of public information, freedom of information regulation has protected and enabled the library to fulfill its historical function as the main hub facilitating people's access to public records. The public library is in effect a public institution that operates as an open system. This openness has translated into notions of libraries as community hubs and access points for a variety of types and forms of information, recently including Internet access.

In the transition of convergent media scenarios, these different notions of public access, their assumptions about the role of the state and the social function of the technology have been challenged. Contrary to public access regulation of the 1960s and 1970s, which treated media technologies as vehicles for socio-economic development and political participation, public access regulation in the convergent era regards media

technologies as fulfilling a dual role: first, as a mechanism for economic development and trade, and second, as an information delivery system facilitating interaction between government and citizens, – such were the visions offered by the NII-Initiative. Public interest is closely identified with industrial strategies to stay competitive in the global economy, while public access is framed as enabler of the markets through the expansion of the consumer base for ICT services.

A third interpretation of public access emerged from federal programs funding communities organized to bring ICT to their locales. Community networking sought to promote the expansion of markets by innovative applications in public institutions and other public spaces; these programs emphasized community involvement in the adoption of technological applications for education, workforce development, health, and community building efforts. Federal programs such as the TOPs and the DOE's Community Network Program reflected this goal. Implicitly, they assumed the public were both consumers and potential producers of services and goods in the knowledge economy. However, this framework has faded away under wireless broadband regulations that clearly prioritize industry and market goals.

Another important change has been the transformation of the vision of public access as open access, towards a model of individual membership for institutions, collectives or groups, such as faith-based organizations. By placing advanced telecommunication services under common carrier regulation, the 1996 Act made affordability, non-discriminatory and open access key principles regulating Internet infrastructure during the first years of its diffusion. As Lessig points out (2006), these principles were supported by the configuration of the "NET-95," a network that privileged open architecture and end-to-end applications over architectures of control such as encryption, authentication, filtering and enclosure. In the realm of public access

policies this spirit was reflected in the principle of open access through public institutions such as libraries. However, as access regimes have evolved to be more protective of property rights of private communication systems, public access policies emphasize institutional applications as primary goals of these programs.

As telecom and cable providers have started to compete in the business of broadband services employing multiple platforms (i.e. wired and wireless), a new set of questions has emerged regarding the regulatory principles that should govern access to multi-channel systems able to deliver voice, text and video. Although the debate has been framed as one of technical classifications, it raises important questions about what kind of rights and freedoms will be supported and enabled by access rules in a post-convergence scenario. Should we apply principles governing information systems that have increasingly tended to define access rights in terms of property rights? Or should we remain committed to common carriage regulation that applies principles of openness and fair access but privileges a free-market rationale over social and democratic principles? Is there an alternative way to conceptualize wider and more democratic public engagement with the media? What principles will be privileged and supported by Internet access at public institutions, and at other spaces that are easily accessible by everyone? Access rules to high-speed, electronic systems will shape people's abilities to speak, gather information, and interact in the post-convergent era.

In the view of federal administrators, having attained universal availability of Internet services at designated public institutions, and given the shift towards personal, mobile Internet access, the rationale for supporting access programs has ended. Since 2003, the early diffusionist approach to ICT access has been replaced by market-driven access policies that increased incentives for private businesses to engage in the provision of wireless broadband services in public places. Conceptions of the active audience have

evolved from one of public voices and collective action represented in access television channels and community technology groups, to the image of active consumers who pay for services, and are able to make informed and rational choices in the free market.

These trends are reproduced by state level policy. Moreover, the examination of Texas level policy indicates that states have been in fact initiators and supporters of federal level trends towards the marketization of access rules. The State of Texas enacted key market oriented policy changes in 1996, before the Federal Telecom Act of 1996. Directives of the 1996 Telecom Act leading to the devolution of state power over telecommunication infrastructure and services to states further transformed state legislatures into important sites for the definition of new media policy. States have faced important challenges, but have lacked the ability to fulfill the role they have taken on. With no previous regulatory experience and expertise in managing significant resources funneled through the TIF, Texas state administrators were easy targets for the interests of industry, vendors and larger public institutions receiving state funds. The astonishing amount of resources invested in advanced infrastructure development was probably the most important contribution of TIF. Under the TIF model, which was highly focused on hardware and infrastructure development, state investment also became an indirect subsidy for vendors and providers. Besides its investment in library facilities, infrastructure development for institutional networking through the community technology program was the main outlet of state support for public access programs. However, both programs combined absorbed only 15% of TIF investment. Not only did TIF give lesser support to programs that enhance public ICT access but it also promoted a linear view of technological development that underscored connectivity while de-emphasizing training, content creation and promotion of community applications. With the closure of TIF in 2003, Texas abdicated its commitment to public ICT access.

Instead, the state has furthered its market-driven approach to broadband access policies in unparalleled ways. Overruling historical municipal franchises over video providers, Texas has been the first state to limit local authority over broadband providers under the promise of expediting the delivery of high-speed services to the home.

The reassertion of the power of the state over localities has not completely prevented the latter from providing support for public ICT access. Public ICT access has thrived and survived at the local level as an expression of multiple policy discourses on access. The determination of localities like Austin to follow this path has been based on three main factors: 1) its previous regulatory experience as grantors of public access to cable systems; 2) influence of federal level discourses and programs to expand access to the NII; and 3) the demands of local stakeholders (e.g. educational institutions, libraries and community groups; industry and trade organizations) for the diffusion of these services. Even as federal and state support for these programs has faded, municipal powers remain committed to public access.

However, a hostile federal and state climate to local ICT policy initiatives has constrained the range of action of municipal administrators. The City of Austin has consciously avoided initiatives that could be interpreted as trespassing on the limits set for public action, and entering into competition with private firms in the market. Under this framework, municipal action is legitimated in so far as it supports private initiative or responds to a community demand. Furthermore, through the adoption of multiple discourses to justify public ICT programs, the City of Austin has not developed a framework that unites the various connection and leverage efforts and resources. The fragmentation of discourses on access is reflected in the allocation of the administration of these programs to diverse City dependencies. In conclusion, over the past decade, public ICT access policy has lost support to the point of almost vanishing from federal

and state agendas, except for some programs focused on rural broadband. Effectively, it has been reduced to a local phenomenon contingent on the influence and political clout of social groups that advocate for it. As the direct recipient of claims of local stakeholders, the municipal government devised a one-on-one response strategy prioritizing a fragmented vision of access for particular groups or communities rather than an integrated policy that support open access for all.

Chapter 5: The Field of Public Internet Access

This chapter discusses the process of structuration of the organizational field of public Internet access by examining how the state, private companies, local governments and user groups interplay in the production and distribution of these services in Austin, Texas. Austin, a blooming technopolis in the United States, serves as a case study to understand how policy discourses act as structural force framing the action of local powers in the configuration of these systems. Elaborating on Bourdieu's concept of field, I regard the field of ICT access as the structured space of positions in which agents and institutions compete for the distribution of different types of resources or capitals to advance their institutional goals. As a social space, the field of public access to new technologies is a system of social and symbolic interactions that contributes to the process of reproduction or transformation of agents or potential users' dispositions toward technology. The field of access also possesses a materiality expressed in the institutional and spatial distribution of resources supported by public computing networks.

Symbolic capital or the power to legitimize socially accepted notions and practices of technology is a crucial component in the process of structuration of the field. Policy discourses are the structural force through which the state wields its symbolic power, exerting hegemonic control over and through resources and organizing different social forces in the field. However, this process takes place through both symbolic and material interactions with local powers such as industry and citizens groups that see their different interests represented in the spread of public computing networks. Thus, in this chapter, I will attempt to describe and locate within the social and economic space that I call the field of public Internet access, the domain where diverse stakeholders compete

for the legitimacy of their particular technological practice. As I have discussed in Chapter 2, this knowledge is necessary to devise a framework that identifies the connections between the social uses of the technology and the role of institutions as economic and cultural intermediaries of emergent media and communication systems. As argued in Chapter Four, the fragmentation of policy discourses and programs bringing support to access initiatives has hampered the conception of a comprehensive strategy in support of people's rights of access to new media. Through the analytical concept of field, this comprehensive and relational view is possible, evaluating the various roles that different organizations have in bridging communication gaps. Understanding the social construction of this intermediary role for organizations is crucial to evaluate the possibilities and limitations that certain institutional settings impose on access, and to craft public access policies for a post-convergence media scenario.

This analysis combines concepts and methods of the critical sociology of culture (Bourdieu 1993, 2005; Gonzalez, 1995, 2003) and new institutionalism (Powell & DiMaggio, 1991; Swedberg & Granovetter, 1992). Focusing on institutions rather than on technological designs alone helps the analysis to overcome techno-centric perspectives. By identifying primary agents in the field, their institutional dispositions, and the rationales for their involvement in access initiatives, I describe how particular institutional formations frame symbolic and material ICT practices. These factors come together in delineating particular trajectories in the evolution of the field of access. Thus, the results of my analysis take the form of a historical account about the development of different institutional forms of ICT access in the City of Austin. As DiMaggio (1991) points out, the institutionalization and history of any organization should be understood in relation with the history of the larger organizational field. Therefore, the first part of the chapter discusses the main trends in the formation of the field of ICT access in the

United States. I shall discuss the adoption and popularization of libraries and community technology centers as primary public Internet access models, highlighting the nature of citizens' involvement in these organizations. The second section of the chapter turns to the analysis of main trends that have shaped the field of ICT access in the City of Austin, reflecting on the role of local powers. Through the case of Austin Free-Net and Austin public libraries, I explore the main justifications of public Internet providers for entering the field, and how their organizational embeddedness (Grannovetter, 1992) and dispositions define their trajectory. I employ the concept of embeddedness to understand how access initiatives mesh with existing social institutions in particular historical and cultural settings, defining the trajectory of access groups. I observe the process of embeddedness through the description of partnerships developed to support public access programs. Workers and volunteers of access initiatives were instrumental in this process. Their occupational trajectory and experience in other institutions define the forms of these partnerships. Finally, I discuss how different rationalities for providing these services shape their programs. I shall focus on the reasons for adopting a particular approach over others, and what kind of conceptualizations of the public and the social application of the technology are supported by these programs.

The field description presented in the following pages is also a practical extension of the theoretical ideas discussed in Chapter Two. Apart from the practical purpose of situating the discussion about the impacts of shifting policy discourses on access, this analysis also has the theoretical objective of weaving connections between the literature of community technology and social construction of technology at one level, and cultural production and institutional analysis at another level. I argue that this perspective can deepen our understanding on how changes in policy discourses elicit particular

interactions and exchanges among industry, citizens, and other institutions that provide public ICT services at the local level.

1. THE STRUCTURE OF THE FIELD OF ICT ACCESS

The roots of citizens' involvement in public computing networks in the U.S. can be traced back to the late 1960s when multiple groups engaged in cable access channels, public education, community building, technology development, and academia saw in the emergent digital networks an opportunity to further their causes through a culture of open access to technology. Overall, they represented an elite of early adopters who were first exposed to ARPANet (Advanced Research Projects Networks), the precursor of the Internet, through academic and research institutions. During these early days, the diversity of organizational agendas yielded a wide mixture of initiatives seeking to extend public access to ICT in different ways. Accounts about the development of public Internet initiatives usually take for granted the organizational forms of providers of these services, implying that organizational imperatives and local decisions are standardized through common sense and consensual understanding about the goals pursued by these initiatives and programs. This approach has resulted in naturalized views of the technology as having predetermined social functions, downplaying the conflicts and power struggles present in these processes. In reality, the adoption, diffusion and institutionalization of one access model over others is surrounded by institutional tensions resulting from the displacement of some social groups in favor of others.

For example, an unexplored question in the literature of community media, community technology and community informatics is why groups engaged in cable access television were not the first in offering public computing access. Conversely, we know little about the structural and local factors that compelled a few cable access centers in the nation to embrace new technologies in the late 1980s. The question is even more

intriguing when one considers how often terms such as “interactivity” and “multimedia” were employed in industry and policy discourses that describe the potential of cable systems in the 1970s (Dutton et al., 1987). Interactive and pay-TV services were transformed into main arguments of those heralding deregulation of cable systems in the 1980s (Pepper, 1987). In fact, interactive videotext experiments were run on the cable system in the mid-1970s (p.68). Promises about the technical capabilities of cable to develop interactive applications were used by the industry to make inroads into once restricted urban markets. An important part of the “cable fable” that sold new services along with the idea of deregulation was that the technology would lead to a vast expansion in political participation supported by the multichannel capacity and interactivity (Streeter, 1987). Cable access activists exposed to such discourses were also fully aware of the communicative potential of computers. For instance, in his book *Guerrilla Television*, the “Bible” of the alternative media and access movement in the 1970s, Michael Shamberg called for the use of video technology, cable television and computers to restore the lost balance in the media ecology dominated by commercial interests. Different from the centralized mode of production typical of mass media, guerrilla television would greatly benefit from technologies that support decentralized modes of production and distribution (Shamberg, 1971). But the focus of the access movement was placed on portable cameras rather than on computers. Protected under local video franchise agreements, cable access groups of the early days developed a distaste for corporate sponsorship.

Philanthropy that promoted the adoption of desktop for public use in the 1980s chose to develop its activities around another institution: public libraries. In reality, cable access groups were latecomers to the world of public computer access. A few community access centers in cities such as Grand Rapids, Michigan, and Somerville, Massachusetts

created media centers that housed public computing sites in facilities adjacent to studios of cable-access channels in the 1980s (Servon & Nelson, 2002, p. 49). However, long before that, libraries and community networks made Internet access available to the public in cities around the United States.

1.1. Citizens as architects of public computing networks

The adoption of computing technologies for public use was driven by text-based communication applications that made use of storage and networking capabilities of computer technologies. In the early 1970s, technologists developed online applications such as the bulletin board systems (BBS) with the specific purpose of facilitating conversations and supporting communities online. Citizen groups also began to recognize that the uneven diffusion of technology would deepen social inequalities. In response, the Berkeley Community Memory Project, a project of the citizens and the City of Berkeley, initiated in 1973 the first community network installing public terminals that networked public spaces in housing projects, public libraries, laundromats, a senior center, and a university dormitory (Beamish, 1995). Users of the network could leave messages in coin operated machines, and open a new bulletin board forum for one dollar (Servon & Nelson, 2002). Building on this early expertise with communication networking applications, citizens involved in computing networks also facilitated the first local government commitments to support public access to ICT. Cities such as Santa Monica supported public computing networks access at libraries and city facilities with the express purpose of fostering democracy linking local government with its constituencies. These vibrant networking groups that operate in cyberspace and real spaces were in fact the expression of the effervescent technological industry and culture of places such as Chicago, Santa Monica, and San Francisco (Servon & Nelson, 2002).

In a text-based environment, the communication capabilities of public computing networks were the killer app long before email and the Internet would become available to the public. Universities and colleges that first envisioned the application of the technology as information delivery systems were central nodes of these developments. In 1984, Dr. Tom Grundner founded the Cleveland Free-Net Project, the nation's first free, open-access, community computer system. Grundner ran a popular bulletin board on health issues at the medical school of Case Western Reserve University (CWRU) in Cleveland. He was persuaded that the impact of his work would depend on the connection of modem-equipped microprocessors from home (Bajjaly, S. 1999). With funding from the CWRU, Grunder launched Cleveland Free-Net as an open, community-based information service, accessed through a dial-up modem. The original medical forum idea changed to the format of the “electronic city” to deliver and exchange local information. The most popular area of the Cleveland Free-Net online presence was the Kiosk, where people could post contributions, ranging from small talk, to hotly debated controversial topics of the day.

Pursuing the goal of expanding connectivity, Free-Nets spread around the country. Users were attracted by the inexpensive cost of these services. By 1989, Free-Nets had achieved a critical mass and Grundner created the National Public Telecomputing Network (NPTN). Grundner believed that local community networks had the potential to operate like the National Public Radio system combining the distribution of local and national content. The idea of syndication was not popular among all members of the Free-Net movement but brought visibility to the organizations that started to face difficulties meeting the demand for services. With low home subscription fees, and free public terminals for access, Free-Nets’ services were in high demand in the late 1980s. However, the lack of stable funding and increasing technical demands were

transformed into the main challenge for the survival of these organizations (Morino Institute, 1994). At the beginning of the 1990s, Free-Nets faced the rise of commercial online services such as Compuserve and American Online, which with their well-funded email services and usenet groups made Free-Nets' interface look obsolete. In 1996, the NPTN went bankrupt, and the sustainability and model of the networking approach to public access was questioned.

A common criticism of these initiatives was the techno-centric bias of their efforts which tended to frame access only in terms of technological applications and connectivity (Gurstein, M., 2001). Technology activism of the early days was in fact inspired by this net-libertarianism, spreading romantic notions of individuals empowered by technology and able to become electronic publishers without mediation of any institutions. Computer penetration was universal among community networking activists who presumed everybody would have the means and skills to reach out and participate in networked environments. In the context of the introduction of the NII, policy and industry forums such as the Morino Institute (1994) were formed to debate "the place of the grassroots" in this initiative. It was argued that community networks should not be guided by an entrepreneurial approach to access, trying to compete with commercial providers (Schuler, 1996). Instead, community technology should develop as non-profit, grassroots organizations, run by community leaders and volunteers pursuing community development and educational goals, civic engagement, and all other activities not developed by growing commercial ISPs. At the time of these debates, another organizational form of computing access attracted the attention of government officials and philanthropists as a viable venue to harness grassroots efforts in the construction of the information superhighway. These organizations were known as community technology centers (CTCs).

CTCs had been around since the 1980s making use of desktop, personal computers to support the proliferation of computer labs in community-based facilities and inner-city locations. These programs tended to respond to needs of localities commonly faced with problems of unemployment, education, health, and public safety. Instead of focusing on connectivity and content information services, CTCs offered public access to equipment and training programs for free or at no cost. In 1983, Antonia Stone, a retired school teacher, founded Playing2Win (P2W) in Harlem, targeting at-risk youth through educational programs with support of community members, the local city and foundations. P2W epitomized the aspirations of many CTCs around the country that saw public access to ICT mainly as a tool for continuing education and social transformation in a digital environment with persistent social inequalities.[73] In the early 1990s, P2W was regarded as a model initiative of operative and fiscal sustainability, and became the central node of the first regional networking effort in the U.S., syndicating CTCs in the Boston area, Washington, DC, and Pittsburgh.[74] This experiment, first named P2WNet, eventually became known as the Community Technology Centers' Network (CTCNet), the main national network of CTCs and other non-profits "united in their commitment to provide technology access and education to underserved communities."[75] PTWNet was formed in 1992 with a three-year grant from the National Science Foundation. By the fall of 1995, the network was renamed the Community Technology Centers' Network and included 52 affiliates. That same year, CTCNet received another $1.8 million grant from the National Science Foundation to fund a five-year national expansion. Today the organization counts more than 1,000 members around the country, many of whom were

[73] From Play 2 Win website http://www.playing2win.org/organization/history.html. Accessed August 25, 2006.
[74] CTCNet website http://www.ctcnet.org/who/milestones.htm. Accessed August 25, 2006.
[75] Ibid.

the recipients of private funding and federal grants made available by the Department of Commerce and Department of Education since the mid-1990s.

The networking experience of the 1980s and 1990s translated into the consolidation of community technology's identity around themes that blend access to ICTs with educational and economic development goals. These programs do not compete with commercial services. Rather, they are defined as non-profit organizations that provide support for government and industry through their educational, workforce development and public information programs. Recognizing "that in an increasingly technologically dominated society people who are economically disadvantaged will be left further behind," members of CTCNet embrace the mission to provide "access to and training on information tools" to improve the sustainability of their communities.[76] This notion of public access marks a departure from the conceptions of public media championed by cable access channels, which stressed the contribution of public access to democracy by acting as an enabler of free speech and providing a forum for the expression of diversity of voices (Linder, 1999). Both traditions, however, are inspired by visions of media technologies as a "community building bloc" promoting inclusion and serving the needs of disenfranchised communities. This aspect is accentuated by the ability of networking digital technologies to connect geographically diverse communities and enable virtual interactions (one-to-one, one-to-many and many-to-many) supporting social bonds.

1.1.1. Organizational structures, mission and programs

As Servon and Nelson (2002) argue, organizational structures of public computing networks reveal different understandings of how technology enables community. Program structure dictates particular arrangements of organizational

[76] Ibid.

resources allocating budget, equipment and personnel to different activities and areas. Occupational background of staff is a particularly important variable which can mark the trajectory of the organization in significant ways. These decisions are crucial in shaping program outcomes and the benefits derived from public ICT access.

Community technology initiatives have tended to organize as centers, networks or a combination of both (Servon & Nelson, 2002). Community technology centers (CTC) tend to be stand-alone places created to solely address information technology access gaps, which could include issues of connectivity, training and creation of content. Community networks (CN) grew out of the tradition of online communities and tend to focus on enabling connection between people who share place-based communities. CN typically promote content creation and skills needed to generate online content with a local spin. The third option is represented by embedded CTCs or networks of designated public access spaces housed in multi-service agencies (shelters, housing facilities, senior centers, libraries, and other city facilities) whose programs are typically as diverse as communities involved in the network.

Structural and programmatic goals of community access initiatives in the U.S. reached a turning point in the 1980s through two important developments: 1) the appropriation of the benefits of the personal computer revolution for public access, and 2) the promotion of networking, sharing and partnership among community access organizations (Servon & Pinkett, 2005). There is evidence that since 2000 CTCs have expanded mainly through partnerships with public institutions (schools, libraries, hospitals, recreational centers, churches, or museums) and social service organizations (public housing complexes, homeless shelters, and religious organizations) (Servon & Nelson, 2002; CTCNet, 2005 Summer/Fall). In addition, more social service agencies have incorporated access and training on ICT into their programs. Such organizational

arrangements have led to a significant increase of CTCs embedded within larger social institutions. By 2005, embedded CTCs accounted for 75% of respondents to CTCNet's annual survey. Table 5 shows the breakdown of embedded CTCs by institution. As the figures show, schools are by far the most important partner for public access. In this context, access and educational goals have come to be understood as "the" primary mission of the community technology movement.

Table 5. – Embedded CTC by Institution Types (2005)

Institution	N	%
Schools	38	43
Government agency	10	11
Youth centers	10	11
Library	7	8
Church temple	7	8
Rec centers	7	8
Others	10	11
Total	89	100

Source: CTCNET 2005

However, CTCNet data (2005) indicate that less than half of CTCs (42%) offer open access and training for the overall community. The majority of the initiatives aim their efforts at specific populations (23%) within the community (e.g. youth, minorities, unemployed, homeless) or at specific outcomes (23%) such as economic development programs, health care services, and economic opportunities. Attending to the needs of particular groups has also changed the makeup of CTCs' staffs. Surveys indicate that the occupational background of the majority of CTCs' leadership and managerial staffs is nowadays associated with community development programs (27%) and the educational field (19%). IT workers represent less than a quarter of CTCs' management (CTCNet, 2005, Summer/Fall, p.2). These organizational changes pose both opportunities and challenges for public access.

Studies have found that the absorption of public access programs into larger institutions (e.g. schools and libraries) provides sustainability to these projects by leveraging the resources available at these locations such as broadband connection, networking capabilities, and staff trained to deal with the public (Strover et al., 2004). The last component is crucial since the presence of staff to help users has been associated with the usability of the service. Access programs at social service organizations are also effective in reaching particular constituencies like seniors, at-risk youth, the unemployed, and members of low-income families (Kaiser, 2005; Kvasny, 2006; Schofield, 2003). Libraries and community centers also provide more stable locations for access. Permanent labs that enable longer online sessions are preferred over Internet access at kiosks and drop-in sites.

Nonetheless, the same studies have found evidence that access programs embedded in large institutions divert resources from the operation of open access sites, and can eventually devote the equipment to institutional uses only (Kvasny, 2006; Strover et al, 2004) . Services of embedded access sites are typically limited to regular school and library hours. Schools, for instance, are closed over weekends, evening hours and take long breaks during the summer, and ICT access is commonly shut down during these periods. Lack of availability of childcare and other services can discourage the use of these facilities by certain publics, like single mothers, and heads of low-income households.

1.1.2. Funding and sustainability issues

Community networks are organizations with small funding frequently requiring some patch work for its administration. They rely on resources from diverse sources, including foundations, federal, state and local governments, corporate philanthropy,

memberships, private donations and corporate sponsorship. According to CTCNet data, although host organizations such as community centers, schools, and libraries may have budgets that exceed half a million dollars a year, almost all CTCs (92%) have program budgets below this amount, and a large majority (71%) operate with less than $100,000 a year. Stability of funds is a permanent issue for these organizations, especially after the Federal government shut down its technology grants programs between 2002 and 2003. State and local government funds typically provide 25 percent of CTCs' funding, making them important supporters of access (CTCNet, 2005, Summer/Fall). However, private funds are the most important mechanism of financing public access. Foundations are the main single contributors of these initiatives, representing between 18 and 23 percent of CTC funding. Thus, sustainability of these organizations depends on specific, short term (typically one or two year) programs in priority areas for the donor. One of the ways CTCs cope with such instability is by accepting private and corporate in-kind donations to cover the operation costs of replacing equipment, acquiring software, and paying for broadband services. In-kind donations represented between 18 and 24 percent of CTCs' funding in 2005. The practice fosters dependency on private and unstable sources for day-to-day operations. This whole scenario depicts public Internet access programs as largely dependent on philanthropy and the support of local communities. Without long-term funding arrangements, CTCs lack the leeway to develop long-range planning and to pursue long-term goals.

1.1.3. Geographic location and outreach

Several nationwide studies of community technology describe these networks as an urban phenomenon (Servon and Nelson, 1999; Servon, 2002; CTC, 2005). High-density areas and those with high concentrations of computer and telecommunication industries were sites of early support for public access to ICT. Spillover effects of the

information economy benefited public access programs in different ways. First, as important employers in these regions, tech firms created a natural demand for workers and training, providing incentives and support for the emergence of public access programs. Second, workers of these companies have played an important role as early adopters of computers and Internet, contributing to the diffusion of the technology as volunteers and trainers of public access programs. Third, information technology (IT) workers also became part of growing waves of technological activism across the nation that advocated for community technology initiatives. Annual assessments of CTCNet indicate that the trend toward the concentration of CTCs and CNs in high density areas continues. CTC membership in urban areas increased from 65 to 75 percent of the total number of CTCs between 1999 and 2005 (Servon, 2002; CTCNet, 2005 Summer/Fall). The same studies show that operations of community technology remain largely focused on certain neighborhoods (40%) and cities or towns (30%) illustrating the local nature of these projects. Less than a fourth of them engage in regional, multi-city, state or multi-state projects which entail larger networking efforts. Patterns of geographic operation of community technology initiatives have significant implication for public access. On the one hand, not all neighborhoods and localities are created equal and concentrating operations on particular communities can add to the fragmentation of socio-geographic spaces in cities and regions. On the other hand, localization positions these programs to grow deeper roots into the communities they serve, ensuring that local needs will be met.

1.2. ICT access at public libraries

The contemporary public library, as a tax-supported institution that opens its collections and facilities to all citizens, was the result of a historical shift in the system of storing and distributing knowledge from a model based on ‘ownership’ and ‘closed access’ to one based on ‘commons’ and ‘open access.’ Some authors contend that the

introduction of ICT to library operations since the late 1980s promoted a definite break from the traditional notion of public libraries as depositories of knowledge in favor of a vision of the institution as a public access information system (Kane, 2003).

By the late 1970s, libraries in suburban communities already reported coin-operated computer access (Zabinski & Zabinski, 1979). However, the first public access microcomputer laboratories made their appearance in municipal libraries in cities such as Chicago (IL) and San Bernardino (CA) (Davis et al, November, 1987; Dewey, November 1984). Apple Corporation, in partnership with cities, boards of trustees, and citizens groups spread the use of microprocessors at public libraries across the nation. The Library's Apple Corps program was the first in the country to massively donate microprocessors to libraries, showcasing the value of desktops for the general public. In the era of no Internet connectivity, public computer access at libraries was presented as a vehicle to help people master basic math and language skills, while offering exposure to new technology that would become a central part of American life (Freeman, 1985). In developing its funding program, Apple called on local communities to submit proposals and organize as "Apple Corps" that would bring computers to their local library branch.

Thus, Apple Corps were mostly composed of librarians, staff and local volunteers who wanted to bring new technologies to the institution. Once the computers were awarded, Apple continued supporting the work of librarians and volunteers through publications such as the "Apple Computer Clubs' Activities Handbook," which taught educational and recreational activities that could be developed using Apple II microprocessors (Miller & Caley, 1984).

Since the early days of the microprocessor, the private sponsorship of computer manufacturers has been a central force in the expansion of public computing systems at libraries. ICT applications at libraries typically evolved in five different areas: 1) access

to electronic bibliographic databases for students and teachers of independent school districts; 2) computer classes for the general public; 3) search programs; 4) communication links between registered members of the community (mainly through bulletin board systems) and 5) career counseling microcomputer service (Davis et al, November, 1987). By the late 1980s, indexing databases had virtually replaced print indexes as the tool of choice among patrons of libraries that provide the service (Kane, 2003).

In the early 1990s, in the context of the Clinton's NII Initiative, computer and software manufacturers assumed a leading role in sponsoring plans "to wire" libraries. The Microsoft Foundation – today's Bill and Melinda Gates Foundation – and the Gateway Foundation became major sponsors of the American Library Association's call to bring universal Internet connectivity to libraries across the country. In 1995 Microsoft launched its Microsoft's Libraries Online initiative to bring connectivity to 8,000 libraries throughout the nation. The initial plan valued at $400 million has been called the greatest gift to American libraries since Andrew Carnegie gave $41.2 million for library construction between 1890 and 1917 (Anonymous, 1997). Since 2003 the Gates Foundation has reduced its donations to U.S. libraries, focusing the investment on poorer and at risk areas. Funding has been redirected to: 1) hardware grants to replace and add public computers in vulnerable libraries; 2) connectivity grants to support high-speed Internet connections; 3) technical training and support; and 4) advocacy grants for training, tools, and research.[77]

Public Internet access has posed major challenges to traditional operations of libraries (Henderson & King, 1995). Integrating communication applications into regular operations of an institution specialized in information management has not been an easy

[77] U.S. Library Program. Bill and Belinda Gates Foundation. Program description. Keeping Communities Connected. Accessed on July 3, 2006 http://www.gatesfoundation.org/UnitedStates/USLibraryProgram

task. The vastness of online services raised questions about search and navigation strategies, e-literacy and computer skills, speech, copyrights, security, and privacy (Kane, 2003). In an increasingly complex technology environment, librarians need more than traditional librarianship training to serve as teachers, e-government facilitators, and technology trainers. National surveys indicate that by 2005, 99.6 percent of all public library outlets were connected to the Internet. Of those libraries connected to the Internet, 98.9 percent offered public access computing for their patrons (Bertot, McClure, Jaeger, & Ryan 2006). However, these studies have also found that the majority of libraries (85%) struggle to meet the demands of access at all times. These growing pressures are a threat to the sustainability of open computer access at libraries.

> "… The maintenance of traditional services, the addition and expansion of public access computing and networked services, and now the addition of a range of e-government services tacitly required by federal, state, and local governments, may stretch public library resources beyond their ability to keep up. Two key questions are: 1) how much longer can public libraries add to and extend their electronic services without a corresponding increase in their resource support? 2) Can libraries continue to add services and resources which require substantial retraining and retooling of librarians and library technology infrastructure?" (Bertot, McClure, Jaeger, & Ryan 2006, p.17).

National assessments of ICT access at libraries also report declining support for regular operations of these programs that typically demand system upgrades and training (Gordon et al., 2004). Since its inception in May 1997, the Educational rate program (e-rate) has provided over $7 billion to cover connectivity cost for a discount rate, and the initial cost of wiring schools and library facilities. Libraries have absorbed about $350 million of the e-rate funds. The e-rate programs run with universal service funds survived early attempts of phone companies to challenge the legality of the educational subsidy which providers considered an illegal tax. However, the program faced increasing criticisms over its administration, leading to a six-month freeze of funds and a four-month moratorium on new projects in mid-2004. The halt of the program created

significant cash flow problems for Internet operations at schools and libraries. In reality, federal and state governments have not accompanied their increasing demand of electronic library services for e-government applications with corresponding support for these activities. Nowadays, between 85 and 90 percent of public library support comes from the local communities (Bertot et al., 2006). Federal and state aid provides only between 5 and 7 percent of operational expenses, and other sources supplement the rest of investment needed in the operation of public libraries (p.19).

Shifting spending and funding patterns are taking place within a framework of deep hostility to libraries that support policies of open access through technology. In 2003, the Supreme Court rejected the ALA's claim that federal regulation denying funding and subsidies to libraries and schools that refuse to install filtering software violated the speech rights of library patrons (U.S. vs. ALA, 2003). In adopting this decision, the Court assumed that Internet access through libraries does not constitute a public space, thus the public has no speech rights in these spaces (Stein, 2006). Furthermore, the Court confirmed that the societal role of libraries is to provide requisite and appropriate materials for their patrons, stripping libraries out of any public forum function (p.90). The decision sanction the federal government's practice of making e-rate funding contingent on the use of filtering software. The rule potentially affected more than 60 percent of all public libraries in the country that by 2004 had not developed this practice (Gordon et al., 2004).

Private donors like the Bill and Melinda Gates Foundation have sided with the ALA's petition for increased government funding for free, public Internet access.[78] However, in the last couple of years, libraries have been faced with budget cuts and shrinking funding opportunities, after the closure of digital divide programs. In this

[78] See Kniffle, Leonard (May 2002) "Americans Want Free Access, Says Gates Foundation Study." *American Libraries*, Vol. 33 (5).

context, libraries are more reluctant to try new technological platforms and devices, lagging in the role of innovators and early adopters that they have played in the past. Considering that limited resources can be better employed in upgrades of existing equipment and programs, libraries have adopted emerging technologies such as wireless broadband connectivity and devices at a conservative pace. In early 2006, penetration of wireless broadband in the urban libraries was 42 percent (Bertot et al, 2006, May 16). Deployment in rural areas have only reached 31 percent of library branches, and almost half rural locations had no plans to deploy the infrastructure in the near future (p.4). Initial assessments of wireless Internet at libraries indicate that the platform expands services and helps to meet the existing demand and attracting wireless users to the library. The model of adopting the technology is one in which existing desktop access is supplemented by individually owned laptops. Librarians have started to regard wireless networks as an opportunity to serve the community "at all times," and as a mechanism to attract a "wide range of users" (p.5). Such users include college and graduate students, and small business owners who now visit the library in search of free Internet connectivity.

To summarize, public Internet access at libraries arose and has evolved as a fairly localized, independent initiative of communities interested in gaining access to new technologies. Government funds have been narrowly focused on infrastructure and connectivity services. This support has been vital to 'wire' libraries around the country. Private foundations, in particular those with links to software and hardware manufacturers, have been pivotal in complementing the investment required for equipment. Libraries are fighting the battle for upgrading their systems and programs to keep up with technological developments. They have been at the forefront of public ICT access as an early adopter of new platforms and applications. However, continuing on

this path is a challenging task in an environment characterized by decreasing resources. The next section delves into the social dynamics that serve as a background for the adoption of public computing networks at libraries and community centers in the City of Austin, Texas.

2. TECHNOLOGY AND LOCAL POWERS IN AUSTIN

The field of public ICT access in Austin emerged and operates in relation with other social fields such as technology industries, education, entertainment and media, and up to some extent, it materialized as an arena of intersection and interactions among them. Before examining the social construction of public ICT access in Austin, it is necessary to understand the main traits of Austin's technopolis experiment. In this section, I will relate idiosyncratic trends in the development of Austin's knowledge economy, elaborating on their particular modes of social and political organization, and their modes of relations characteristic of the local powers.

In the material plane, the transformation of Austin, once known as a laid-back college town, into one of the most vibrant technology regions of the United States set objective conditions for the presence of resources and expertise on technological innovations. In the symbolic realm, the power structure of the Texas capital has grown to be associated with ideals of self-determination and economic might with a flair for developing visionary plans (Orum, 1987). In fact, Austin was born as a political, economic and social experiment in 1839 when Mirabeau B. Lamar chose the site on the Colorado River to be "the seat of a future empire:" the new Republic of Texas (p.7). As aptly described by Anthony Orum, the social history of Austin can be characterized as the continuing, episodic struggle between two competing visions: one led by great wealth, industrial development and private property; and another inspired by the dream to make the benefits of growth available to ever larger numbers of people, giving them the tools to

define their future. The debate has historically overridden issues of racial discrimination and inequalities in Austin, as reflected in the city's infamous 1928 Master Plan that moved African American and Hispanic communities disperse throughout the city to the east of downtown. During the 1960s, the confrontation between these two competing visions took the form of acrimonious battles in the housing market between affluent, Anglo, capitalist cronies and union officials, leaders of the communities of color and New Deal democrats. The conflict between property and civil rights was finally solved when the city voted for a policy of open housing implemented well before fair housing was declared a federal level policy. In Austin, the victory for civil rights was also a victory for property rights through an extended, more prosperous and inclusive real estate market. The hope for a third way, an alternative road to economic progress, emerged in Austin over this era, coupled with the social engineering rhetoric and experiments of Lyndon Johnson's Great Society. It incarnated the aspirations of market entrepreneurs and researchers of the University of Texas, planting the seeds of a nascent technology industry. This legacy has evolved to become the second creative economy of the country, and the region with the fourth highest level of income inequality in the United States (Florida, 2002).

2.1. Austin's technopolis experiment

The knowledge-based economy has become a primary arena for the interaction of local powers in Austin, framing the role that institutions play, their modes of exchange, and the social recognition they enjoy within the Austin community. Modeled on Silicon Valley's development plan, Austin's technopolis strategy of the 1980s also included creating science parks, investing in university research and training programs, providing capital assistance, creating business incubators and building advanced infrastructure. What has made the Austin model unique is its emphasis on institutional networking

arrangements and affordable quality of life as catalytic forces of economic growth (Smilor, Kozmetsky, and Gibson, 1988, p.165-167). The strategy devised by regional entrepreneurs and researchers of the University of Texas at Austin such as Raymond Smilor, George Kozmetsky, and David Gibson, is in itself an example of how local powers have employed their economic, social and symbolic capital to craft a mode of production and social organization in which the role of the local government as organizer of local resources recedes, while private initiative and entrepreneurialism is highlighted with different libertarian overtones (Orum, 1987).

As a deliberate economic development strategy, the creation of a robust technopolis rests upon the establishment of several clusters of high tech industries closely knit together through dynamic organizational links. First designed as a cluster economy of semiconductors and semiconductor manufacturing equipment, Austin has also become the home of computer manufacturers, software development firms, game developers, website-based firms, and most recently, of networking and wireless industries. But the mere presence of high tech firms is not enough. The real engine of the technopolis is the intense social networking activity of groups and organizations that come together with a single objective: to promote local economic development through technological diversification (Smilor, Kozmetsky, and Gibson, 1988; p.146). These linkages represent the spikes of what Smilor et al. called the "technopolis wheel," the universe of institutions that summon resources to build the technopolis. They include universities, large corporations, emerging companies, federal, state and local government, and support groups that use cooperation and competition to spur innovation. The "technopolis wheel" model departs from the assumption that public and private sector activities are by nature "adversarial" (p.147). However, differences can be overcome under a model of public-private partnership that clearly delineates the role of each stakeholder in the creation of

the modern technology city-state. Private companies play roles as leading forces in economic initiatives, and creating jobs. Meanwhile, different government segments assume more appropriate roles as promoters of private initiatives, fostering affordable living and supporting training and education, all necessary conditions to attract firms in search of affordable and high skilled workers.

The role of educational institutions is best illustrated by the work of entrepreneur, philanthropist and scholar George Kozmetsky, one of the creators of the "technopolis wheel." While serving as a Dean of the School of Business at the University of Texas at Austin in 1977, Kozmetsky founded the Innovation, Creativity and Capital Institute (IC2) with the objective of strengthening connection between industry and the academy, following a "think and do" approach to knowledge creation, dissemination and application.[79] As the recipient of important industry contracts, grants and donations, universities support technology firms and R&D ventures by applying knowledge to emerging industries, and educating and training the work force and professionals required for their activities. Educational institutions are also places were the talent and workforce needed for the technopolis experiment, mingle and establish linkages through research efforts and classroom camaraderie (Stewart & Gibson, 1990). IC2's mission has materialized in the creation of organizations such as the Austin Technology Incubator (ATI), the Capital Network, and the Austin Technology Council, spin-offs of the university-industry collaboration that become "support groups" responding to needs, and echoing the demands of particular cluster industries. In Smilor et al's view, support groups are crucial "networking mechanisms" for the development of the technopolis, and important gathering places for the formal and informal exchange of ideas, visions and resources (1988; p. 166-67). An important ingredient in promoting these dynamics is the

[79] About IC2. Available at http://www.ic2.org/main.php?a=5&s=0. Accessed in March 2007.

action of social "influencers" who the authors describe as individuals with "high level of education," extensive personal links with diverse social groups, and reputations and credibility in the community, all valuable assets to build "consensus" for economic development and technology diversification (1988; p.179).

By many accounts, the Austin model epitomizes the ideal of technological development. It has attracted the relocations of large manufacturers and R&D facilities such as IBM in late 1960s, Sematech, Applied Materials, and Advanced Micro Design, National Instruments, and Motorola during the 1980s and 1990s, and Samsung, 3M and Intel more recently. The Austin economy also showcases home-grown companies such as Dell, Buffalo and Wayport that are at the forefront of national and global markets of personal computing and wireless networking systems. But how has the technopolis wheel model shaped the lives of Austinities?

The relocation of large tech firms in the San Antonio-Austin corridor translated into a significant population boom, the creation of employment opportunities, and demand for high skilled workers. Between 1978 and 1998, the population of the Greater Austin metropolitan area doubled, moving beyond one million, and reaching 1,452,529 in 2005 (Austin Chamber of Commerce, 2006). Between 1993 and 1998 employment grew 4.7 percent per year, and even after the crash of the dotcom economy in 2000, unemployment rates in greater Austin have been consistently lower (4.4% average in 2005) than the average national and state rates (5.3% in 2005). In 2000, the employment mix was dominated by services (30%) and retail trade activities (22%), of which almost half was located in technology related industries such as software development, semiconductor R&D, computer system integration, software consulting, internet related services etc. While manufacturing represents a smaller percentage of the Austin economy, employment in this sector is concentrated in technology companies (70%)

(U.S. Department of Labor, 2005). In conclusion, the growth of the knowledge economy has created a critical mass of tech-oriented and tech-savvy people who act as early adopters, creators and advocates of technological innovation. They are the so-called creative workers, an emergent class in the knowledge economy.

The creative class and its elite group –the super creative core – emerged as a sub-specialized sector of the service economy (Florida, 2002). The difference between the traditional service class and the 'creatives' is easily understood in terms of wages. "Creatives" make twice as much as their counterparts in the service class, and they are mostly engaged in activities involving information and knowledge creation and design. The creative ethos revolves around values of individuality, meritocracy, diversity and openness (p.165-189). Creatives privilege active and experiential lifestyles that combine work and leisure, and take advantage of the technology to telecommute. Priding itself on being a creative center, the City of Austin and its technology firms have crafted diverse mythologies about the way of life in the fabled land of technological development. The following description of Austin taken from Intel's website can serve as an example:

> "The capitol city of Texas, Austin's unique flair for the arts, entertainment and cultural diversity attracts visitors from around the world. With an average of 300 days of sunshine per year, vast rolling hills, and a chain of lakes 150 miles long, outdoor activities are plentiful… Hailed as the "Live Music Capitol of the World", Austin features hundreds of venues offering music of every tempo. Austin is home to South by Southwest, an internationally acclaimed ten-day music, film and multimedia event. The area's diverse culture also plays a large part in many of Austin's communities, neighborhoods and schools…"[80]

Appealing features such as the outdoors, live music, technology and diversity, are employed to attract high-tech firms. These depictions of Austin stand in sharp contrast with the reality of increasing disparities in the city in the last two decades. The rapid growth of the technology industry also fostered high real state prices and growing income

[80] Intel website. Our sites in the U.S. http://www.intel.com/jobs/usa/sites/Austin/

gaps, and added to existing issues of land use, residential segregation and poverty. Local powers have attempted to address social equity issues, framing them as the problem of preserving Austin's quality of life through a strategy of "smart growth" (Hartenberger, in press). The dilemma was presented in the late-1990s as how could Austin maintain affordable living and high living standards in the face of population and economic growth.

The theme became the object of deliberations of the 360 Summit, a forum of regional high-tech leaders who first gathered in 2000, "to end the anonymity of the new economy of Austin by connecting high-tech executives to each other, and the tech community to the greater Austin community."[81] The forum reviewed the status of problems such as traffic congestion, fostering live music and the digital divide, and concluded with a "Declaration of Interdependence," an industry commitment to guarantee its support to four areas: quality of life, equity, social diversity and entrepreneurship, and assisting government agencies. Most of the enthusiasm of the 360 Summit faded away with the downturn of the dotcom economy. When the group last met in 2002, it recommended sober management and urged a smaller group of participants to trust in the potential of the local economy.[82] Despite the predominant quality of life rhetoric, the poverty ratio in Austin has consistently increased in recent years, even above the national average (Table 6).

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[81] Zadan, Peter (March 27, 2000). A declaration of interdependence: inspired urgency. Austin American-Statement. Editorial; Pg. A9

[82] Lori Hawkins (January 15, 2002) 2002: "A year of sobriety," Tech leaders foresee tough months to come. *Austin American-Statesman* , Business; Pg. D1

Table 6. Poverty indicators – City of Austin

Poverty	2000 Austin (%)	2000 U.S. (%)	2005 Austin (%)	2005 U.S. (%)
Families below poverty level	9.1	9.2	13.8	10.2
Individuals below poverty level	14.4	12.4	18.1	13.3

Source: U.S. Census Bureau

As illustrated by the 360 Summit experience, the "technopolis wheel" has shaped a particular form of local governance that relies and favors the networking of individuals with higher accumulation of cultural, economic and social capital, leading to the creation of an elite group of organizations that act on behalf of Austin's citizens, building consensus and connections between industry, government and academic institutions. The local government through its different administrations legitimizes its rule by supporting these organizations. Economic development has become the primary objective of stakeholders, while the social agenda of the city has been framed as the quest for affordable living and high quality of life, with scant reference to deeper social equity issues. In sum, in the Austin community, institutions and individuals derive symbolic power and legitimatize their actions through their contributions to the diversification and growth of the local knowledge economy. In the hegemonic discourse of the local powers of the city, technology is commonly portrayed as a vehicle of progress and the fastest road to economic success. Technological development has been naturalized and presented as a social benefactor, and a factor that easily translates into higher living standards. In this context, public ICT access initiatives arose in the mid 1990s as an attempt to bridge the contrasting socio-economic realities of Austin, delivering the benefits of technological development for all citizens. The next section traces the roots of public computing access, exploring the connections with previous experiences of access to media technologies in the city, and the different organizational forms that these programs have taken.

3. THE FIELD OF PUBLIC INTERNET ACCESS IN AUSTIN

Choices with respect to the configuration of public computing networks in Austin have historically depended, on the one hand, on the socially differentiated dispositions of agents involved in these initiatives and the economic resources they can summon and, on the other hand, the technological options made available in the city. Both terms depend in turn on social and economic conditions framed by public access policies, and on how local powers define the possibilities opened by technological innovation. In this section, I shall describe the structure of the field of ICT access in Austin and the mechanisms by which it operates, focusing on two spheres of its objective construction: first, the objective relations established by different access organizations and their embeddedness with other institutions; and second, the rationale for the modes of interaction through which they operate. The description of the organizational dispositions in the field and its symbolic realm is presented through a historical narrative constructed through interviews, archival materials and secondary data.

It is difficult to establish how the idea of public computing access emerged in Austin. Most studies examining public ICT access in Austin have credited the City as mastermind of these initiatives through the creation and sponsorship of Austin-Free Net (AFN), the local non-profit group organized in 1995 to bring connectivity to city libraries (Horrigan, 2001; Servon, 1999; Straubhaar et al., in press). Although Austin Free-Net was the first initiative supported by the municipal government to extend public Internet connectivity, evidence indicates that by 1992 there were in the City at least two groups that considered and debated plans to make computer and Internet services available to the public. They were Austin Community Television (ACTV), and a group of librarians and students of library sciences from the University of Texas that later became known as the Metropolitan Austin Interactive Network (MAIN). Although MAIN and AFN evolved to

become the most important references in the history of public Internet access in the city, the story about ACTV's failed attempts to develop computer access services has been mostly ignored. The case is worth examining because it illustrates how different normative discourses on access, institutional dispositions, and power struggles for the control of access resources have shaped the field of public ICT access in Austin.

3.1. Public computing and cable access, a failed marriage

Austin was one of the first cities in Texas and in the nation to establish a community-produced television carried on the local cable system. In October of 1972, a group of Radio-TV-Film students at University of Texas – calling themselves ACTV – met on the UT campus with officers of Capital Cable to request space in their system[83]. Under the pressure of federal and state debates for increasing regulation on local cable monopolies, providers conceded to give ACTV time on Channel 10.[84] ACTV began operations in June 1973, and is today the longest continuosly running access channel nationwide. Under the premise that "community-oriented content is not well sustained by market-driven media," and understanding that public access provides and protects "free-speech soapboxes for our electronic age," the City of Austin has justified and fostered the expansion of public access resources in Austin.[85] Since ACTV's inception, public access resources have grown to nine channels run under five managers. Besides channels that deliver public, educational and governmental content, the City of Austin created in 1994

[83] ACTV (1993, December) 1993 Annual Report.

[84] Besides the public access requirements made explicit by the FCC Cable Report and Order in 1972, Texas Legislature debated in 1973 a bill that would redefine cable as a public utility. For more on this debate and the rationale for the creation of ACTV see Smolen, Paul Neal. (1973). *Potential for Public Access to Cable Television in Austin*, Texas. Unpublished M.A. Thesis, UT-Austin.

[85] City of Austin. Management of Austin's Public Access Television Channels, Facilities and Programming. Access on March, 2006 http://www.ci.austin.tx.us/telecom/pubaccess.htm

a music channel as an economic development project to showcase local music and musicians.[86]

According to one of the founders of ACTV and long-time advocate of access in the city, the idea of adopting computing and networking technologies in access television production facilities emerged between 1989 and 1992, when the City explored the feasibility for the creation of an access center with multimedia capabilities.

> "…We were the first in talking about multimedia. Back in the days, multimedia was the use of text, pictures and a projector, but then video came along and put everything on a single format. The same is happening with computers now. Back in 1992, a multimedia center was a center with video production capabilities that can also house computer equipment… I think we started to hear more about computers as this city became more involved in promoting computer businesses. Then we got City officials who were very interested in computers…"[87]

But city officials were not the only stakeholders interested in establishing a multimedia access center. One of the station managers at the time remembers that the leadership of the station was inspired by the experience of community access groups from Grand Rapids, Michigan, that in 1980 organized as a cooperative of non-profit media affiliates, and created an access center that housed radio, television and computer resources made available to the public. "When we talked about the media center we thought in the Grand Rapids' model, a center with multiple production facilities, a one-stop shop for access."[88] Between 1991 and 1992, ACTV advanced plans for the computerization of their facilities. Equipment upgrades included the first two desktop video editors, new computers and software for scheduling programming, use of facilities

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[86] City of Austin. Live Music Capital of the World. Accessed on March 2006 http://www.ci.austin.tx.us/music/ . The contract of Channels 15 was managed by the Austin Music Network (AMN) until September 1,2005. AMN proclaimed itself to be the only non-profit independent music television channel in the country. AMN's programming was mostly music videos or recorded live sessions, interspersed with presenters. Although all musical tastes were broadcast, AMN emphasized non-mainstream music such as indie, punk, blues, country and jazz.

[87] Interview with ACTV founder, May 2006.

[88] Phone interview with former ACTV manager, April, 2007.

and equipment, two MAC stations to write scripts, and a dial-up Internet connection. However, ACTV lacked a LAN, Internet connection was only available from computers at the main office, and producers did not have easy access to it. Personnel used Internet access to use email and follow conversations on bulletin boards.[89]

In December 1992, the ACTV board of directors approved a three-year plan leading to the creation of the Austin's Community Communication Center, "a center to provide community access not only to television, radio, computers and print, but to the developing and as yet unknown telecommunications of the future."[90] In the words of ACTV's Board President, Maria Rocha, the center represented "a historical leap" that would "catapult Austin's diverse communities onto the electronic super highway of the 21st century."[91] Convergence of telephone and video systems was an important theme justifying the plans of the station. In the view of Paul Congo, executive director of ACTV:

> "Soon, every person with the access to something as simple as a home telephone or cable TV converter will be able to impact their national government, the nature of educational materials, and the demand for communication aids and services. The explosion of opportunities for access mandates a new structure for the delivery of communication resources and training to the public" (ACTV, 1993 Annual Report, p.2)

But as ACTV embarked in the realization of its new vision, several developments slowed down the plans to build the Austin's Community Communication Center. The creation of the center demanded changes in the organizational structure of ACTV, and managers, staff, producers and leadership grew suspicious of each other, engaging in tense discussions about the goals and aims of this reorganization. As a result of such tensions, several board members left the organization, generating instability in the

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[89] Ibid.
[90] ACTV (1993, December) 1993 Annual Report, p.1.
[91] Ibid.

leadership. An ascertainment study of the community cable access system commissioned by the City and carried out by the consulting firm Kilpatrick Associates (March 12, 1996) determined that this "turbulent history" had became a systemic problem leading to high turn-over of Executive directors, hindering the long-term planning of the organization. In the view of a former ACTV manager, many producers and staff did not understand how the integration of media services would be beneficial for the station:

> "Austin takes great pride of its public access channel and there is somehow the belief that we have the "perfect access system." This brings a culture that is reluctant to change and self-examination. Some thought that the idea of creating an access center was a pointless, revisionist exercise that would end up taking away resources needed for video production activities. There were producers, for instance, who thought that computers were things you use as word-processor and to do spread-sheets. They had noting to do with video, thus ACTV should not provide these services."[92]

A deeper issue was associated to the growing competition for resources and support for public access projects in the city. Blooming community radio stations such as KOOP Radio and KAZI Radio[93] started drawing more grassroots support and City funding in the late-1980s and early-1990s. At the same time, in 1993, the City issued a RFP for the operation of its Austin Music Channel. ACTV competed but was defeated by a group of former ACTV producers that setup a new non-profit, Austin Music Network (AMN). The situation is explained by a former manager of ACTV in the following terms:

> "Austin has many people doing community media. At the beginning we thought that the access center would be well-received by these multiple initiatives but community ventures are always difficult. In Austin, there is even an administrative separation between public, educational and governmental channels.

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[92] Phone interview with former ACTV manager, April, 2007.

[93] Austin Community Radio Inc (KAZI Radio) was created by Dr. John Warfield, professor of African-American Studies at the University of Texas. His vision was to create a non-commercial station that served the needs of the African-American community in Austin. With funding from CPB and loaned tower space from LBJ-S Broadcasting, KAZI began transmitting on August 29, 1982. KAZI manages a City contract for the transmissions of Austin City Council.

> Grand Rapids didn't have this problem when they started. They were the central organization to begin with…"[94]

As the recipient of almost a third of the investment of local cable franchises for access, ACTV was the object of great scrutiny by the City. The organizational crisis went beyond the limits of what city officials would consider as acceptable "unpredictability" with the "Infosex scandal." In 1994 the host and the producer of "Infosex", a program that promoted safe sex practices on Channel 10, were prosecuted and convicted for airing indecent materials under the state of Texas law.[95] The case brought great criticism against ACTV, while stirring the spirits of First Amendment advocates. According to some of the promoters of the access center, the administration of ACTV was marginalized in the eyes of the City after the "Infosex" scandal.[96] While heated discussions about speech rights were filling the air of public access channels, a new set of actors entered the scene to bring Internet connectivity to Austin libraries.

3.2. Public Internet access and the creative ethos

Between 1994 and 1996, the Metropolitan Austin Interactive Network (MAIN) and Austin Free-Net emerged as the core non-profit organizations bringing public Internet access services to Austin residents. Their visions and missions were aligned with predominant policy frames of the Clinton's NII-Initiative, and local government's plans that highlight universal access to public information and the spread of technological innovation as primary goals. Grassroots support for these organizations stemmed from two main sets of knowledge professionals: librarians and technology workers. Their participation and visions reflected a blend of communitarian and entrepreneurial

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[94] Phone interview with former ACTV manager, April, 2007.
[95] Harmon, Dave (October 19, 1995). *Appeals court ruling upholds convictions in cable sex case*. Austin American-Statesman, City/State; Pg. B12.
[96] Interview with ACTV founder, May 2006.

aspirations that was employed to position themselves as experts and mediators between the tech-savvy elite of the city and the marginalized.

MAIN was founded by a group of librarians led by Sue Soy, a librarian who moved to Austin from Los Angeles in 1991 and was surprised to find that here were no public computing centers in Austin (Servon, 1999). The group started holding regular meetings in 1992 and by 1993 the City and ACTV had taking notice of their activities. Although MAIN and ACTV shared concerns for content creation on electronic media, issues of formats, praxis, and different interpretations of how the public participates in the process prevented them from establishing connections and collaboration. A former ACTV manager explains the situation in the following terms: "A friend from the channel introduced me to MAIN and I attended some of their meetings. They were mostly librarians talking about how they could put information online for people to use at the libraries. They just talked because there was not funding. I could not see how we'd work together at the access center, and at one point I stopped going to their meetings."[97]

MAIN was officially incorporated in January 1994, with the mission to establish and operate an online, community-access computer network. The purpose of the network was "information sharing and communication among the people and governmental, educational, commercial, cultural, religious, and civic organizations, in order to enhance lives and make the best use of community resources."[98] Modeled on community online services developed in cities like Cleveland, Blacksburg, and Tallahassee, MAIN wanted to create a free online community network that would be available to those with a personal computer and a modem and eventually in libraries and other public spaces.[99]

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[97] Phone interview with former ACTV manager, April, 2007.
[98] About Us. MAIN website. Access on April 2003, http://www.main.org/maininfo/index.html
[99] Hawkins, L. (June 25, 1994) Group developing free on-line Austin computer. Austin American-Statesman. Business section

The founding group envisioned the service as a community bulletin board where users could get information on everything from city and state government to library catalogs to job and real-estate listings. By end of 1994, supported by cash and equipment donations from Applied Materials and Advance Micro Devices, MAIN finally installed two Internet-enabled computers at two branch libraries: the Dove Spring library, located in a Latino, and the Carver branch in an African-American neighborhood. The pilot was well-received by both the librarians and patrons, and Susan Soy –who worked at the Public Library system– was commissioned to find additional funding to expand these services to the other branches.[100] It was at that time when the City of Austin's Information Office introduced a plan to extend public access to City services online through the creation of the non-profit organization, Austin Free-Net (AFN). This was a different initiative from the one originally proposed by the Office of Telecommunications and Regulatory Affairs to bring public computer access at through a multimedia Community Communication Center administered by ACTV.

As discussed in detail in Chapter Four, AFN was conceived as the non-profit arm of the City to deploy public Internet access under a state regulatory environment increasingly hostile to local government's attempts to develop telecom infrastructure. The creation of a young, non-profit organization that could carry out the mission was even more appealing after City officials' failed attempts to promote public computing access at ACTV facilities. But there was more behind the idea of forging a private-public partnership to perform the job. AFN was also the expression of activist-minded city officials who found support in the liberal culture of the emerging creative class of Austin. Like many technologists who populated Austin, City information officers involved in the project conceived the Internet as an instrument to affect social change. Sue Beckwith,

[100] Ibid.

web officer of the City and first AFN executive director, explains her perspective in the following terms:

> "My previous social justice work had been as a volunteer with the Austin Peace and Justice Coalition to stop U.S. intervention in El Salvador and Nicaragua – that volunteer work and my urban studies coursework at UT with David Perry is what most affected expansion of my consciousness to create change… I first understood the Internet in the early 1990's through my use of PeaceNet for text-based communications. I was introduced to the Net in a conversation at Las Manitas cafe by a professor from Mount Holyoke College with whom I was working on an international Women's Day events. Then, I got a couple of accounts for the environmental engineers at the City. One of our engineers was working with endangered species found in Barton Creek, and she came to me one day so excited because she had found another engineer in Finland working with the same species living in a creek in Finland! This story, though ancillary, was an early "wow" for me when it came to practical uses of the Internet. Then along came the Web... a big "wow-wow…"[101]

Beckwith's leadership is widely recognized by informants of this study as an influential factor in the development of AFN. She was known as an active member of peace and gay and lesbian activist groups in Austin. Her vision of Internet access was one that blended issues of governance with social activism. The web was not a simple vehicle to facilitate public information; Beckwith placed Internet access under a social justice frame. While performing her functions as City Web officer designing the City's website, Beckwith met Julie Gomoll, founder and director of GoMedia, a design and development firm that consulted for the City's web project. Gomoll, an art and web designer, became a local success story in 1996, when her company GoMedia was acquired by Excite!, and she was appointed the local director of one of the top Internet portals in the country. Gomoll became the first AFN's board president in 1995, and with Beckwith played an important role shaping the vision of the organization. As recalled by an AFN manager:

> "Sue and Julie were the ones that came up with the original vision. The City had all these plans to put information online but they were the ones who asked …but who's gonna use it? Back then public access was the old free-net model of the

[101] Written communication with Sue Beckwith, October 2004.

> NPTN, with a bunch of guys in a garage with servers, connecting people on dial-up to the Internet for an hour a day for free. Sue and Julie said, "no, that's not gonna work." They were much more social and web-oriented people. The vision was to get information online to the people by giving access through a computer network that link libraries and community sites. The City just loved the idea…"[102]

Different from other free-net projects in the country, AFN did not contemplate supporting individual access via modem and dial-up that could potentially compete with private ISP. Rather, it focused on enabling access in public spaces such as libraries and community centers. In this regard, the AFN's model combined traditions of community networks and community access centers through a network approach to access that brings connectivity, training, and information to citizens in places easily accessible to everyone. According to one of the founders of AFN, this vision had the advantage of attracting support from various stakeholders.[103] Web-designers could volunteer developing web-based applications or running a class on the web. Technologist and system developers could collaborate in network deployment, while librarians could focus on information services online. But the success that AFN experienced attracting community support was largely due to the social networks and image of its founders. Gomoll, GoMedia and then Excite! were instrumental, bringing resources and support from the tech community, and serving as a link between the City and the aspirations of creative professionals. Founder board members Susan Price, Rachel Matthews, and Dave Evans – who worked at companies like GoMedia and Digital VooDoo – were part of this community of technology and web enthusiasts first attracted by the project. In 1996, as Free-Net started their operations, Excite provided the non-profit with office space in its newly opened facilities in Austin. Web consultants like Digital VooDoo worked in developing AFN's

[102] Interview with AFN administrator, September 29, 2006.
[103] Interview with AFN founder, November 2006.

web presence. AFN ran technical operations from two labs in the East Side but its central office remained in Excite's headquarter until the web portal went out of business in 2000.

But how did members of the creative class understand their mission spearheading a public access endeavor? In 1997, AFN board members used to write emails to friends and colleagues inviting them to support AFN's important mission. A web developer and member of AFN's leadership explained it in the following terms:

> "Sure, the digital divide concept has been seized upon by politicos trying to seem in the know. But I don't fault them for taking every opportunity to shake us "haves" awake and remind us that we're privileged. Sure, the poverty and education gap has always been there. But I believe the Internet represents a very real danger of exponentially accelerating the disenfranchisement of the poor and undereducated. […] I work in the private sector. My job is to replace existing business process with web-based self-service equivalents […] Here's an example that illustrates the problem as we saw it when we started Austin Free-Net. If someone in East Austin needs some information from the city –information they're guaranteed access to in the FOIA– he or she *can* trundle down to city hall, fill out a form, pay duplication fees, and so forth. Assuming he or she has transportation, and is physically able; *and* has the time to spare; *and* has the money to pay duplication. While someone west of I-35 with Internet access at home or work could just surf to the city's site, and pull up the information. This gap disturbed me, and several of my colleagues. We formed AFN to be part of the solution. AFN makes free Internet access available in libraries, community centers and other public spaces. I realize we were not solving *all* the disparity issues, and that there are many more profound ones that I don't pretend to understand. But as Web industry professionals, how can we *not* do all we can to keep it free and available to all, as Tim Berners-Lee envisioned it? Where else do you suggest to start?..."[104]

Distancing themselves from seemingly opportunistic, governmental debates of the times about the digital divide, creative professionals framed the issue as an ethical dilemma for technology workers. The creative class saw the lack of Internet access as a real threat to society, fostering ever growing disparities between them, "the privileged," and "the poor and undereducated." Internet use defined the line of the new class divide. Thus, access initiatives were regarded as a philanthropic activity aimed at members of the

[104] Email communication, November 13, 1997. Austin Free-Net Archives.

underclass who were in danger of being further disenfranchised. Bridging the gap was not a job for the government but a task better accomplished through private, non-profit initiative. Members of the private sector, as the leading force of technological development, show their social responsibility by mobilizing to bridge emerging digital gaps through public access. Internet would not solve existing social problems but it held the potential to act as a social equalizer between the historical divides that have separated residents of the west and the east of the City, enhancing individuals' freedoms, opportunities and quality of life for those who use it. Freedom of information, free and open access ought to be made available to all. In creating its first projects and programs, AFN developed a particular cultural intermediary habitus that mixed the local government rhetoric on access to public information with popular discourses of freedom, individual rights and open access characteristic of technology professionals of the dotcom era. In the following section, I shall discuss how this vision was reflected in the configuration of public Internet access at Austin's public libraries.

3.3. Public Internet at Austin's libraries: Mobilizing for the freedom of information

Although in 1992 the City considered that ACTV facilities were the natural location to provide public Internet access in Austin, by 1995 City libraries had become the target of the first citywide initiatives to bring free Internet to Austin's citizens. A partnership between AFN and MAIN carried out the plan. After running separate pilot Internet services at the Carver branch and the Dove Springs branch libraries in 1995, the organizations decided to independently apply for funds of the Texas State Library and Archives Commission. At this point MAIN and AFN were very aware of each other's efforts and related to each other as friendly competitors. In January 1996, the State made the official announcement of its awards granting $206,900 to Free-Net and $39,500 to MAIN, as part of its $910,000 commitment to provide Internet access at 94 libraries in

Texas. Drawing on significant local and state government support, Free-Net arose as the leading public Internet provider of the City. AFN and MAIN struck a deal according to which MAIN would develop web content for non-profits and city users, while Free-Net would cover the cost of deploying 52 terminals in the 21 library branches, and offering training to get library patrons online.[105]

But the sustainability of the project required more than the seed investment funded through the State grant. AFN estimated that it would need to raise $95,000 a year to cover ongoing training, technical support and connectivity cost.[106] Private donations were not just desired, they were needed to run the organization. In 1996, the City somehow dismissed the recommendations made by consultants to address problems of sustainability of public Internet access by integrating the Library's Internet access operations and the ACTV network, leveraging resources of the cable franchise agreements. The report of the consulting firm Kilpatrick Associates pointed out that:

> "There are ongoing efforts to expand citizen access to the Internet through programs like Austin Free-Net. Such programs provide a valuable service but have extremely limited resources. They depend on contributions from businesses and public and private grants or other support […] Each library is connected to the cable and telephone network. The City can require that strategically located libraries obtain or maintain high-speed data connections to the communications networks(s). Access to local Internet providers could be made available, at a reasonable determined charge, for use by these programs. Further, each communications franchisee could be required to contribute funds for purchase, installation, and maintenance of multimedia computers that can be used to generate all forms of multimedia production at those libraries […] Users could make their productions at the libraries and then send the production to the central location over the high speed connection. When the computers are not in use for multimedia, they could be made available for basic Internet access or a number of other applications…" (March 12, 1996, p.32).

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[105] Hawkins, L. (June 25, 1994) Group developing free on-line Austin computer. Austin American-Statesman. Business section

[106] Ibid.

The proposal, though visionary as it proposed the integration of access through digital networks, would have encountered political and institutional resistance to its implementation. Instead, the City committed two permanent staff members to manage the non-profit, and in 1998 signed an official contract to pay $50,000 a year to Free-Net for connectivity, maintenance, and training services at Austin's public libraries. Another important source of support came from volunteers and in-kind donations from local ISPs. One of them, Outernet, donated the co-location equipment that served to interconnect the libraries, offering storage and server capabilities. Public access operations could not run over GAATN, the city network, because it did not had the required security capabilities to support both public and city business operations. AFN had to outsource its network traffic and by the end of 1996 the non-profit chose Outernet as its official ISP. Outernet granted lower interconnection rates than those offered by the local incumbent, SBC, employing SBC services as a backhaul. Charlie Scott, one of founders of Outernet, also served on the board of AFN, and personnel of the ISP was part of the core technical volunteers group that deployed the library network. AFN organizers did not see a conflict of interest in these arrangements. The relation between small, local ISPs and public access providers was regarded as part of a common agenda for furthering competition in the telecom market, lending support to "the small fish."[107] But concerns of small ISPs in furthering public Internet access were not simply altruistic. Ultimately, their efforts and in-kind donations were conducive to increased chances of growth of their market share.

This symbiotic relation and the rationale behind it are best illustrated by the case of MAIN. Gene Crick, MAIN's executive director also served as president of the Texas Internet Service Providers Association (TISPA). Under Crick's leadership, MAIN crafted an entrepreneurial approach to public access, emphasizing the role of the access group as

[107] Interview with AFN manager, October 8, 2004

innovator and diffuser of new technologies. Focusing its mission on getting non-profits and their constituencies online, MAIN started to consult Texas cities and citizens groups around the state about how to develop community technology networks of their own. [108] Austin was MAIN's incubator and the organization built sustainability by consulting and providing online services for communities around the state. With contributions from Broadwing Communications, Microsoft, and Digital Voodoo, MAIN founded the TeleCommunity Resource Center, an online information network that supported these activities. Crick explained MAIN's vision of access in the following terms:

> "MAIN is a community information network for the commercially unloved. Everybody wants to put up HEB's webpage but not everybody wants to put up the Deaf Skiers' webpage, because there are only like nine deaf skiers, yet they're an absolutely valid constituency, and deserve to have communication with one another. And there are other community subsets like this... I don't have to sell you on the notion of Internet as a community where you can find people with affinities. Having been on the Internet many years, I know that it has a lot of potential, and if it winds up being some techno-elitist tool that excludes the majority of the population, then I'm embarrassed by it, and feel that we've failed." [109]

With MAIN mostly focused on growing beyond the City limits, Free-Net became the most important public Internet access provider of Austin. In 1997, the non-profit had accomplished the mission at library branches and Austinites voted Austin Free-Net's stations at public libraries as the "Best Public Place To Surf the Web."[110] However, universal connectivity at City libraries also made Austin the site of one of the first national, free speech controversies for the use of filtering software on library terminals.[111] The director of the Austin Library, Brenda Branch, was forced to retreat from her initial

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[108] Lebkowsky, Jon (1997, December) Untangling the Web. *Austin Chronicle Archives 17* (3). Available at http://www.austinchronicle.com/issues/vol17/issue03/screens.lebkowsky.html

[109] Ibid.

[110] *Best of Austin 1997*. Available at Austin Chronicle Archives: http://www.austinchronicle.com/gyrobase/Awards/BestOfAustin/?BOACategory=Media&Year=1997&Poll=Readers&Display=Long

[111] Hafner, K. (October 15, 1998). Library Grapples With Protecting Internet Freedom. *New York Times*. Technology, Circuits.

commitment to offer unrestricted Internet access when staff reported incidents involving Internet use and child pornography. The staff manifested concerns for sexual harassment, and liability for potential incidents involving minors at the branches. When the library announced its intent to install Cyber Patrol – an Internet blocking software – on every Internet computer, free-speech advocates decried Cyber Patrol as a violation of citizens' freedom to access information.[112] Organizations such as the Electronic Frontier Foundation and ACLU threatened to take the City to court. The library decided to hold town hall meetings with the ACLU, EFF, city officers, MAIN, AFN, and Cyber Patrol representatives. The group recommended refining the filtering software, but ACLU and EFF persisted in their threats. "It came down to a fundamental question: Are you taking books off the shelves, or are you exercising the library's prerogative to select some books and not others?," questioned Jon Lebkowsky, locally and nationally known cyber-activist and EFF-Texas leader who was joined by Gene Crick and other technologists in advocating for a minimal filtering practice.[113] The controversy was finally solved when the City Manager announced that unfiltered access would be allowed on some terminals.[114] The Cyber Patrol case also brought AFN's leadership its first dilemma as city contractor. Should it comply with the demands of the City or should it fight for its principles of freedom of information and open access? After internal debates, the group decided that following freedom of information principles, these decisions should "be made by the people who are responsible for the locations in which Austin Free-Net equipment and telecommunications services are located."[115] Free-Net would recommend an acceptable use policy that supports unfiltered access, but communities as users of AFN

[112] Smith, M. (1997). *Librarianship on the Bleeding Edge: Meeting the Pressure to Filter*. Texas Library Association archives. Available at http://www.txla.org/pubs/tlj-2q97/smith.html.
[113] Ibid.
[114] Naked City (February 1997) "Cyberpatrol still on patrol". Available at Austin Chronicle Archives: http://www.austinchronicle.com/issues/vol17/issue06/pols.naked.html
[115] AFN Freedom of Information Policy. Available at http://www.austinfree.net/freedom.html

services would have the last word on the issue (See Appendix III: AFN Freedom of Information Policy). In the long-run this policy translated into filtered access at libraries, and unfiltered access at Austin community sites. In the aftermath of the Cyber Patrol incident, AFN and the libraries lost some volunteer support among civil libertarians who had enthusiastically worked as technicians and trainers to get library patrons online.

Despite all of these efforts, access at branch libraries remained limited to two computers stations on average, until a $500,000 annual award was given in 1999 to the Public Library system from the Dell Foundation. The Dell's Wired for Youth (WFY) program, a project aimed at enhancing computer and Internet use by youth, greatly changed the trajectory and experience of public Internet access at Austin libraries. In 1999, ten branch libraries were each given eight multi-media computer stations, scanners, printers, and other peripherals. After librarians complained for lack of volunteer support to develop and manage activities around computers, Dell decided that it would additionally fund library positions to staff the program.[116] A WFY librarian would provide activities and assistance to youth interested in learning about and using the technology, especially in low-income and minority neighborhoods.

In interviews with librarians at eight different branches, seven informants pointed out that computer access has changed the mission of the institution. Most of them felt uncertain about how to define the "new" functions of the library, but they agreed that it involved assistance and skills for computer-based activities. Informants also reported ever larger amounts of children and youth – in particular Hispanic youth who no longer use books but computers for school activities, hobby or leisure. Most of the librarians complained because parents seemed to believe that "the library works as a daycare center," and expect staff to monitor and take care of their children. Computer classes and

[116] Interview with Wired for Youth Librarian, March 27, 2003.

assistance were always in demand, and needs could not be met at all times. Demands for training and assistance at branches made the library develop basic Internet and computer classes but these services were offered only at the central library in downtown, Little Walnut Creek in the northwest, and the Ruiz in the east side of the city.

One of the problems reported by librarians is lack of support to provide assistance to patrons who only speak Spanish. In 1999, the Library launched its New Immigrant Project which provides information and services to Austin's new, primarily non-English-speaking, immigrant population. The initiative was the result of recommendations made in 1998 by the Austin Task Force on Immigration Issues. New Immigrants Centers (NWIC) were established in seven library branches in neighborhoods with high concentrations of immigrants.[117] NWIC offer ESL classes, multilingual books and videos, and dedicated computer access for immigrants. While conducting observations at four of these locations,[118] I was surprised to find that "immigrant stations" display signs that warn patrons that "these computers do not have access to the Internet." In fact, the stations do have Internet connectivity but the interface used for navigation is designed as a closed environment that primarily provides links to immigration and naturalization services, job databases, and few links for news services in Spanish. When consulted about why these signs were placed on immigrant stations, staff from the Cepeda library explained that they wanted the stations to be available only for users who need to retrieve information about immigration and naturalization services. Spanish is used as the default page and interface for pages in other languages such as Korean and German. Additionally, the "immigrant stations" offer software applications to help users in their

[117] NWIC are located at the Faulk Central Library, Little Walnut Creek, Cepeda, Ruiz, St. John, Terrazas, and University Hills branches

[118] Participant observation of new immigrant centers were conducted at Cepeda, Ruiz, St. John and Terrazas library branches.

process of cultural adaptation, and to master English language proficiency.[119] Immigrant stations are the only computers with interfaces in languages other than English.

The expansion of the public library network posed several challenges to AFN. Growing demand for services and bandwidth pushed AFN to end its contract with Outernet, and transfer its operations to cable providers Time Warner and Grande Communications in 2001. Additionally, Dell's donation to the WFY program was followed by a $325,000 matching grant from the City of Austin to build in-house technical capacity at libraries. From that point on, the Library started increasing its own capabilities to independently operate public Internet access services.[120] A major task in this process was the redesign of the interface for library patrons. AFN attended these meetings and participated in the deliberations but librarians – as "information management experts" – let the non-profit know that they would lead the process.[121]. The team responsible for the library intranet and the electronic library catalog progressively assumed maintenance and technical support functions originally offered by Free-Net. Since 2002, funding to expand library public Internet access services has come from private donors such as the Gates and Belinda Gates Foundation ($184,000), SBC ($80,000), Applied Materials, and the Dell Foundation. The successful fundraising efforts have been led by the Austin Public Library Foundation and Friends of the Austin Public Library. In 2003, the library announced that it would take full control over its public access network, migrating operations over GAATN, the City's fiber ring. The process concluded in 2005, and since then Free-Net has focused its operations solely on their community sites.

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[119] Some of these applications are Rosetta Stone, Oxford Picture Dictionary Interactive, Road to Citizenship, and Global Writer

[120] As an e-rate-eligible entity, the city library could benefit from federal funds for connectivity costs. This was one of the arguments used by the Library to seek its independence from the Free-Net network.

[121] Interview with AFN manager, October 8, 2004

3.4. Public Internet at community sites: The challenges of partnering for access

Historically, Austin Free-Net devoted most of its resources, time and efforts to provide free Internet access at city libraries. However, the original idea of the founders also contemplated the development of a "community technology network" that would extend services throughout the community by partnering with non-profits and other institutions that work with distressed populations. Free-Net called these locations "community sites" as a way to differentiate them from the library network. In reality, the split also underscored a vision of public access different from the prevalent public information function mostly assigned to public Internet access at libraries. The idea of Internet access at community sites was instilled with aspirations of civil activism, social justice and economic development; this vision was shaped and expanded through several waves of partnerships between AFN and different institutions and organizations in the city. As mentioned earlier, members of AFN leadership were also civil activists involved with several social justice groups. They sought to further the social justice frame in technology access through AFN partnerships with community groups. Contact and participation of members of the University of Texas community were very influential in developing the educational and community angle of this vision, while sponsorship and partnership with industry groups stressed the economic development frame in defining the orientation of AFN programs. As a result, competing frames on access derived from different institutional agendas of stakeholders has challenged the expansion of AFN's community technology network. The East side of the city was regarded as the natural geographic area of these efforts. Although poverty and deprivation have accompanied the growth of immigrant communities towards the south and northeast of the city, the East side – a symbol of a shameful past of systematic segregation in Austin – has been the historical focus of AFN's community initiatives. The East side is invoked to command

support for access initiatives from the City and the residents of the affluent west side of Austin.

Public Internet access started to expand beyond public library branches in 1997 with the creation of the East Austin Community Network (EACN). The project was the first local Internet initiative to receive federal funding through a $240,000 "demonstration" grant from the Telecommunication and Information Infrastructure Initiative (TIIAP) of the Department of Commerce. EACN was an innovative, demonstration project in many respects. First, it developed a social network approach to access, building a community technology network of 11 Internet access sites "on top of a low-income community's social network" of organizations that worked in the East Austin neighborhoods, surrounding East 11th and 12th streets.[122] Second, besides Internet connectivity, the network would offer training and a website that served as a hub for community communications, supporting local content, email accounts, and listservs for residents. Third, it entailed extensive institutional partnership[123] aimed at creating community competence, passing onto organizations the technological knowledge they lack. AFN's main partners in this project were the Austin Learning Academy (ALA) and the Lyndon B. Johnson School at the University of Texas. ALA is a non-profit that operates family learning centers that offer parenting classes, GED and ESL classes, and Texas' first non-school-based. Professor Lodis Rhodes from the LBJ School, co-founder and Chairman of ALA and a community development and education policy expert, served as a link with the UT community. Training for the project was designed and

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[122] East Austin Community Network. Funding Proposal to TIIAP, Feb 1996. Austin Free-Net Archives.

[123] The original network of community access centers was comprised by Austin Learning Academy, Mount Carmel Apartments, New Lincoln Missionary Baptist Church, Conley-Guerrero Senior Activity Center, DeWitty Job Training and Employment Center, the charter school Texas Empowerment Academy, the East Austin Media Lab at Our Lady's Family Center; an small business incubator (Business Investment in Growth), East side story center, East 11th Street Austin Police Department center, and the AFN's East Austin Community Network Lab.

coordinated by ALA, which assumed functions as fiscal agent of the grant, while AFN coordinated the project outreach and technical support. Professor Rhodes became a very influential figure in the process of designing and organizing the EACN, facilitating discussions among partners in which they became more aware of how their decisions configuring the network were connected to core principles of telecommunication policy such as universal and open access.[124] Rhodes, an activist researcher, worked with a group of graduate students in the evaluation and monitoring of activities in the network. In parallel with this project, AFN pursued a partnership with KOOP radio to set up a digital audio editing station, where KOOP volunteers would "train kids from 11th-12th Street to produce audio pieces for broadcast on the radio and on the Net."[125] The idea resonates with Sue Beckwith's interests to further AFN links with grassroots media.[126]

The EACN project was the source of renovated energies for socially-oriented work through technology. Ana Sisnett, known community activist, visual artist, and author, joined AFN to work as a trainer coordinator in this project. Sisnett, whose work as community technology activist and advocate have won national recognition, became the second executive director of AFN in 1998 when Sue Beckwith reassumed functions as City Officer of Internet Services. Sisnett and Denis Guckert-von Ehren were hired by the ALA to coordinate training activities and volunteers of the AECN. In 1998 all sites were in place and ALA and AFN focused on developed training plans for the community and summer camps for youth involving activities with technology. A particular emphasis of the project was to build ethnic integration in the neighborhood throughout its activities.

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[124] Interview with AFN manager, October 8, 2004

[125] An Agreement between KO.OP Radio and Austin Free-Net to be full partners on digital audio editing program. January 1997. Archives of Austin Free-Net

[126] Interview with AFN administrator, September 29, 2006.

In 1999, an evaluation of the Department of Commerce called the project "a success." However, it also found "strained relations" among main partners "largely due to shared goals but different strategies" to accomplish them (Sommers, 1999, April 26-27, p.2). The evaluator found that ALA's emphasis was placed on empowering communities by creating strong family bonds, while AFN seemed narrowly focused on providing infrastructure, access and training "serving all groups in the communities" (p.16), and not only families. In other words, the partners had not negotiated the terms in which their respective missions and institutional agendas would be fulfilled by extending public access. Additionally, the evaluation found that community sites had no ties with each other and AFN centralized project communications, acting more as a central node rather than a hub connecting organizations within the network (Sommers, 1999, April 26-27, p.17). AFN staff also struggled to work with partner sites because they were understaffed, disinclined to share resources, and even reluctant to use email. Most of the problems identified by the EACN grant review would remain throughout different waves of partnerships formed based on funding opportunities that emerged in the following years. Differences in visions persisted beyond the grant. An ALA manager interviewed for this study defined AFN's role in the grant as "technical support." ALA acknowledged that the organization does not share AFN's goal of providing "communitywide access." ALA facilitates computer access and training only to participants of its educational and family-oriented programs.[127] The approach to access described by the ALA's manager is what Free-Net has called "community access" or "access for special populations."

> "Some partners work with special populations and they do not want to have everybody in the neighborhood coming into their site, so in that sense access provided at these organizations is not strictly public or open to everyone. We work with them because they need assistance and technological support, and we are serving people in need."

[127] Interview with ALA manager, November 15 2005.

After the TIIAP grant run out, AFN struggled to ensure sustainability of its services in community sites. Staff positions for training and volunteer coordination became contingent to grant funded projects. Monies of the city contract were mostly absorbed by basic operational and connectivity expenses of the EACN and the expanded Library network. In fact, AFN employed monies of its City contract to pay Outernet for ISDN connection not only at libraries but also at community sites. In 1998, AFN signed an $80,000 three-year contract with the City and the Austin Police Department to establish access and training in six APD locations, and four police substations.[128] The project was part of the strategic plan of the Office of Internet Service, managed by Sue Beckwith, aimed to strengthen the Internet Service Infrastructure of the City. The APD project just added to the demands of the EACN and libraries in terms of program and services. New sources of funding were needed to cover operational expenses such as the training program and the executive director position. Partnerships became a method to compensate for the debilitated organizational capacity of the organization, and to access resources needed for volunteer coordination and training activities. Strained and understaffed, AFN pursued partnerships as its main funding mechanism to support public access. As detailed in Table 7, most of these partnerships were built around federal and state grants.

[128] The project involved ICT training for police officers and public access at APD stations, with an interface that would support applications such as family violence warrant search, sex offender information system, and municipal court warrant information (City of Austin, Office of Internet Services. (October 7, 1998) Strategic Plan FY 1997-1998 through FY 1999-2000. Austin Free-Net Archives)

Table 7.- AFN's partnerships in public access initiatives (1996-2001)

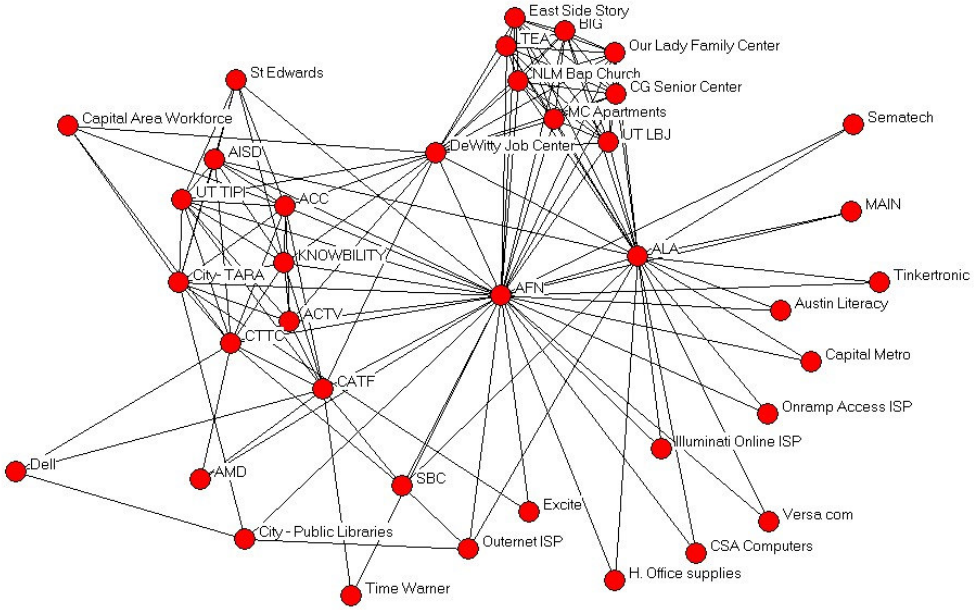
Public Access Project	Year	Core Partner organizations	Funding Source	Amount
Public Internet at City Libraries	1996	AFN, MAIN, City Libraries	Texas State Library Commission	$246,400
East Austin Community Network	1997	ALA, AFN, UT- LBJ School	TIIAP, Department of Commerce	$240,000
COPS	1998	AFN, City of Austin, Austin Police Department	Austin Police Department	$ 80,000
Community Technology Training Centers	1999	Capital Area Training Foundation, AFN, Knowbility, ACC, ACTV, UT	Community Network Program - Department of Education	$360,000
Austin Telecommunity Project Network	2000	Austin Community College, AFN, Austin ISD, City of Austin, Knowbility, St. Edwards University, UT-TIPI	Community Network Program- Texas Telecommunication Infrastructure Fund	$500,000

Source: Austin Free-Net

Figure 3 represents the network of collaboration established by AFN through public access initiatives indicated in Table XX. Taking Austin Free-Net as point of departure, this ego network represents the structure of connections, within which the public access organization was embedded. The data include not only main partner organizations in public ICT initiatives but also sponsors of these programs. For instance, online firms and ISPs such as Excite, Outernet and Illuminati played an important role as supporters of the EACN, while Dell and AMD sponsored the Community Technology Training Centers through CATF. The graph illustrates the formation of two distinct clusters: one around community sites, and another group surrounding the CTTC program. In these arrangements, AFN served as a bridge among diverse stakeholders, including the City public libraries, community centers, non-profits, schools, computer manufacturers, dotcoms, ISPs, and telecom and video providers. The Austin Learning Academy was the second most important access group in this network. As previously discussed, ALA's work was focused on providing family-based educational opportunities for parents and

children in need. Technology was conceived as part of other literacy skills offered by ALA's programs, and partnerships for access also fall into this spectrum. An important aspect to be explored is how AFN has understood and performed its role as city hub for public Internet access.

Figure 3.- AFN's partnerships for Public Access Initiatives* (1996-2001)



In 1999, Capital Area Training Foundation (CATF), a non-profit affiliated to the Austin Chamber of Commerce, became AFN's main partner. As related earlier, CATF defeated AFN in 1998 in an open bid for the $1.5 million, three-year City contract to run the City's Telecommunity Partnership Initiative, a technology-based workforce development initiative that also contemplated public Internet access goals. CATF approached FreeNet and proposed a partnership to apply for one of the Community Technology grants offered by the Department of Education. The grant would fund Community Technology Training Centers (CTTC) to expand the TPI experience at Travis High School to other sites in the community. AFN accepted and became a member

of the Austin Technology Coalition, a non-profit consortium specifically formed for this project with the participation of other organizations such as Knowbility, Austin Community College, ACTV and the University of Texas. The successful completion of the grant application process translated for Free-Net into the possibility of hiring a new volunteer coordinator who would also manage training programs.

The priority of these programs became workforce development, and Free-Net focused its efforts on staffing and running classes from the DeWitty Job Training and Employment Center. The DeWitty Center was part of the original EACN, and had become the core of AFN activities after the EACN lab at East 6th closed. According to an AFN manager at the time, CTTC was mostly run by CATF, concentrating its efforts in expanding training operations in educational institutional such as Reagan High School and the ACC.[129] Partners shared resources mostly in terms of curriculum development and instructors. Another benefit AFN derived from the CTTC experience was to expand its contacts with educational institutions such as ACC and the Telecommunication and Information Policy Institute (TIPI) at University of Texas. These contacts were the origin of a new partnership, the Austin Telecommunity Project Network (ATPN) that in 2000 sought to support and expand the existing Internet sites with funding of the Texas Infrastructure Fund's Community Technology Program.

ATPN was formed by AFN, educational institutions (Austin Community College, Austin ISD, St. Edwards University, and University of Texas), the City of Austin and Knowbility with a two-year $500,000 TIF grant. ACC assumed the role of fiscal agent, while AFN undertook tech support and training responsibilities. According to an ACC representative, it had become apparent that Austin had plenty of technology efforts but

[129] Interview with AFN manager, October 8, 2004

there was a lack of collaboration among them.[130] The ATPN did not intend to create new technology initiatives but to leverage existing resources, and strengthen the structure of governance of public Internet sites promoted by the project. Participant access sites included the ACC Eastview campus, Bedichek Middle School, the DeWitty Job Training and Employment Center, the Senior Activity Center at 29th Street and Lamar Blvd, and University Hills Branch Library. An evaluation of the project carried out by the TIPI in 2003 found that whereas the project had expanded technological capabilities of the partner organizations and access sites, it failed to address major issues of governance and coordination of the partnership.[131] Lacking strong project coordination, efforts of partners were diluted as they found each other at fault for not fulfilling individual responsibilities in the project.[132] The project was designed with no involvement of users or constituencies it set out to serve. Organizations that acted as access sites were mere recipients of the services proposed by the ATPN committee, and the partnership terminated shortly after the grant period ended.

After the ATPN ceased to exist, Free-Net did not engage in other major citywide initiatives. As suggested by an AFN administator, private-public partnerships were fostered by federal and state programs that are now closed. Nonetheless, funding brought by these associations was fundamental for the expansion of AFN's services:

> "We could not fund expansion of our sites or the libraries just with donations and in-kind. Federal grants and the TIF were the most important sources for us and they wanted to see partnerships. The more partners and community collaboration you had the better were the chances to get a federal grant. People started to talk more to each other because of them. We were rewarded for managing partners and not for keeping our eggs into one basket. I actually think that was a good idea,

[130] Interview with ACC representative, March 18, 2003.
[131] Austin Telecommunity Project Network Case Study. Evaluation of the TIF CN1 Grants. TIPI Archives. September 18, 2003.
[132] Interview with ATPN consultant, March 06, 2003.

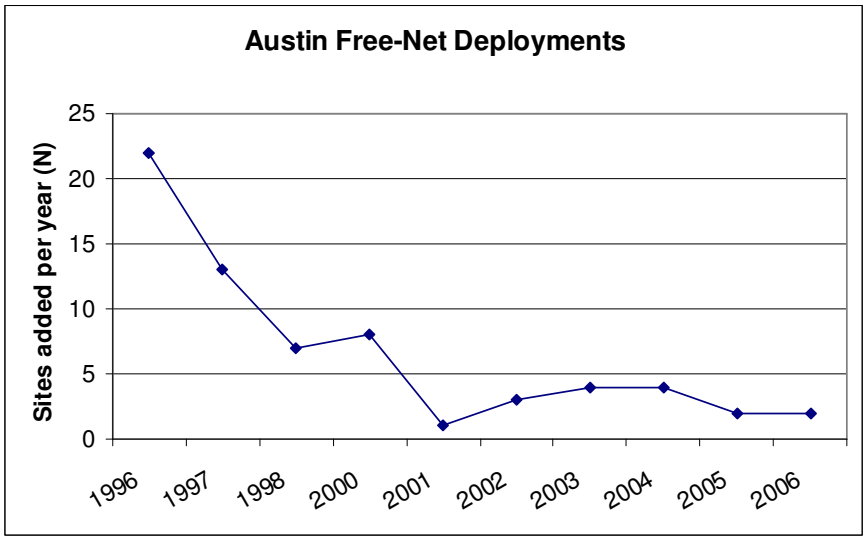
but at that time was hard because we had not worked that close together before."[133]

Federal and state grants also attracted donations from private foundations and individual donors. Federal grants worked as endorsements to the projects they funded. As the library gained independence from AFN, these contributions and recognition turned out to very important for the non-profit. In fact, since 2001 local foundations and corporations have focused their assistance for ICT access on City libraries. "People think that Dell gave computers to Free-Net. We have never received even a mouse from them," commented another AFN manager, alluding to the Dell's Wired for Youth Program.[134]

Partnerships were not completely abandoned by Free-Net. They were pursued on a one-to-one basis with the purpose of adding new sites to the existing network. Sustainability issues were also addressed case by case. In 2001, AFN launched a fundraising campaign, "Adopt-a-Site," inviting companies and organizations to sponsor a selected site, covering operating costs for a computer lab for one year. In addition to financial support, Austin Free-Net welcomed in-kind support and volunteerism from corporations, small businesses, academic institutions and other non-profit organizations. Adopt-a-Site had some success during its first year of implementation but the economic downturn of the dotcom economy seriously impaired fundraising efforts. As illustrated in Figure 4, since 2000 deployment of new sites was haphazard.

[133] Interview with AFN administrator, September 29, 2006.
[134] Interview with Austin Free-Net manager, August 11, 2004.

Figure 4. Deployment of AFN's Internet sites (1996-2006)



The addition of new sites did not translate into a real expansion of the existing Free-Net network. With the exception of libraries, community sites had an average life of just two and a half years on the network. Like the libraries, some community organizations thrived and gained operational autonomy, running their own training programs and technical management. Such was the case of low-income housing facilities that run their own labs. However, labs at churches and some human service organizations were likely to close for lack of interest or resources to support the site[135] (The list of all Internet access sites managed AFN is included in Appendix II). As shown in Table 8, the total number of AFN sites declined dramatically, after the libraries left the network at the beginning of 2006. It is worth mentioning that through the CTTC initiative, ACTV received two computers for public Internet access that were placed in the hall of its access facilities in the East Side, on Northwestern Avenue. In 2004, the management of

[135] Interview with AFN administrator, September 29, 2006

the Center asked Free-Net to withdraw the computers because the space was needed for the operation of the station.[136]

Table 8. – AFN sites by Institution Types (2005)

Institution	2000	%	2006	%
Libraries	22	55	0	0
Low-income housing	4	10	4	27
Senior centers	3	7.5	2	13
Shelters	2	5	2	13
Adult education	1	2.5	2	13
Human service centers	2	5	2	13
Job training centers	1	2.5	1	7
Bookstore/Art centers	0	0	1	7
ACTV	1	2.5	0	0
Churches	4	10	1	7
Total	40	100	15	100

Source: Austin Free-Net

Other organizations such as the Treasure of the Hill Senior Activity Center and the South Austin Senior Center dropped Free-Net in 2003 when the non-profit announced to their partner sites that it could not afford the cost of Internet connectivity, and that they were expected to pay for the service to the Internet provider of their choice. Interconnection costs of community sites had not increased but Free-Net faced an operational deficit and was behind in its payments to Time Warner Cable. Increasing demand for services and bandwidth at libraries branches had forced Free-Net to end its contract with local ISPs and migrate operations to TW in 2001. The cost of broadband cable was higher, and the revenues of the organization dropped considerably. The fall of revenues and the decline of different funding sources are clearly summarized in Table 9.

[136] Ibid.

Table 9.- Austin Free-Net - Revenues

Revenues	FY 2000-01	%	FY 2005-06	%
State and city grants	$247,489	50.4	$51,996	21.0
Private grants	$160,616	32.7	$22,680	9.2
Contributions	$27,294	5.6	$3,602	1.5
Technical & volunteer support	$49,992	10.2	$15,484	6.3
Fundraising events	$2,969	0.6	$530	0.2
Interest income	$2,746	0.6	$372	0.2
Donate services and facilities	$0	0.0	$152,828	61.8
Total	**$491,106**	**100.0**	**$247,492**	**100.0**

Source: Austin Free-Net Financial Statements

In 2000, government funding represented 50 percent of all Free-Net's revenues; but five years later, this funding line was only 21 percent. However, private grants and contributions show the most significant net reduction over this period, decreasing more than 85 percent. Resources from technical and volunteer support reflected revenues perceived by Free-Net from its technical assistance to non-profits. The new line of donations of services and facilities that appeared in the financial statements of 2005 corresponded to in-kind contributions of the City, providing staff and office space for the non-profit. In 2004, AFN moved its main offices to the DeWitty Center. A note from the auditor underscores that in 2005-2006, Free-Net received more than 80 percent of its support from the City.

3.5. Community Internet access and the fragmentation of the public space

In May of 2004, I began attending the monthly meetings of the AFN's board as a participant observer. I had previously attended one of these gatherings in the spring and explained to board members and staff my interest in studying the organization and how it supplied Internet services to the Austin community. The group, composed of six board members and three staff, welcomed me, and considered that my work could help them to assess two important topics in their agenda: sustainability and awareness of Austin Free-

Net services.[137] In this section I summarize the findings of this work which also involved site visits and interviews at eight of the 14 AFN community sites active in 2005. Site visits included: ALLGO (Latina/o Lesbian, Gay, Bisexual and Transgender Organization), Huntington Meadows Apartments, Resistencia Bookstore, Lyons Garden Senior Housing, East Side Community Connection (food bank services), Casa Marianella (immigrant shelter), Austin Learning Academy, and Garden Terrace Apartments.[138]

According to the board minutes from February 2004 to December 2005, the most discussed issue in AFN's agenda was how to regain the strong financial foundation enjoyed in the past. The topic was also raised by a City officials who occasionally attended the meetings. There was an urgent need for revenues to cover the operational deficit of the organization. In 2003, staff accepted to have their salaries reduced but by mid-2004 there was a mounting debt with broadband providers. Some board members believed that financial problems were only one of the issues faced by AFN. The majority of the group believed that AFN had "to reinvent" itself, revising its mission and revamping its programs.

A process of "revisioning" had started in 2003 and was ongoing in 2004. I shall discuss in detail some of the ideas that emerged in these conversations. However, it should be said that in the context of budget cuts and sliding revenues, the discussion about crafting a new vision for AFN became a source of discomfort and growing tension between board members and staff. Faced with the day-to-day pressure of running the organization, staff felt that the board did not adequately pay attention to urgent problems that compromise AFN operations. Meanwhile, board members considered that the staff

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[137] Austin Free-Net board meeting, February 24, 2004.

[138] Most of the work at access sites was conducted in 2005, and I counted with the assistance of Lou Rutigliano, who served as Free-Net board member in 2005 who accompanied me during the interviews. I joined the board of AFN in August 2004. A detailed report of the site assessment was presented to the Free-Net board on February 22, 2006.

were entrenched in their routines and business practices, and were reluctant to change. There was no clear sense of the direction Free-Net should follow; therefore, the group embarked on the discussion of a new strategic plan. The discussion process stalled when two leading board members left the organization in mid-2004. Since then, problems in the leadership of AFN were evidenced by high turnover rates in the membership of the board. Between January 2004 and January 2006, only one person remained as a continuing member of the AFN's board. The instability of the leadership greatly hindered and delayed decision-making and long term planning. The strategic plan that ought to have been finalized in 2004 was finally completed by the end of 2006. Asked about the nature of the problems that plagued the relationship between staff and leadership over this period, a staff member raised issues of occupational background, social capital, and identity of recent leadership of the public access group:

> "We have had a crisis of leadership. We have had good talents but not really strong leaders. The founders had businesses and business planning was part of their way of thinking. They could mobilize for resources quicker… We also got more people coming with their own little narrow vision […] At the beginning there was a *glue*. Do you know what it was? There was a group of charismatic, lesbian, technie-women… A lot of the energy came from people like Julie (Gomoll), Sue (Beckwith), Rachel (Matthews), and Ana (Sisnett), a core group who really fuelled Free-Net. AFN was part of the support they gave each other, and technology was the connection. Community technology was one of the places that allowed women to excel. Technology used to be something only for the old, good boys. With Free-Net, you didn't have to be a guy, a good, old boy to be part of the network; this was appealing and inspiring for many in Austin…"[139]

The organization also faced serious staffing problems. In 2004 there were no training or volunteer coordinators, and these functions had to be performed by other staff members. However, salary reductions had cut the number of working hours, so volunteers had to be employed to complete daily, administrative tasks. Although the organization had some established tools to evaluate their training activities and services,

[139] Interview with AFN staff, Mach 20, 2006.

there were no personnel to process this information. Therefore, the organization was unable to monitor and improve performance.

Directly related to the debilitated organizational capacity of Free-Net was the unstable operation of its public access sites. The most urgent need reported by partner sites was the necessity for volunteer organizing and training. Low-income housing facilities, food pantries and the homeless shelter, for instance, reported high demand for Internet services but the labs remained closed for long hours for lack of personnel or volunteers that could monitor and assist people who wanted to use them. There were no AFN training classes at partner sites. AFN had concentrated its training efforts at the DeWitty Center, and expected that partners would refer users interested in computer and Internet classes to the DeWitty center. Partners believe that the idea was not practical because the majority of users will not have the time or means of transportation to go to the DeWitty center.

I also found much debilitated relations between AFN and partner non-profits in both routine communications about the status of the public access sites and assessments of particular user needs at different locations. Users' opinions were never consulted or invited in AFN's site assessments or routinely monthly checks. High rotation of staff in some partner organizations also hampered fluid communications between sites and AFN. In three partner organizations, the contact person or the staff responsible for Internet services had changed or was new to the job. AFN also experienced problems in getting partners to turn in reports and site operation statistics. A representative from ALLGO even declared that email was probably not the best way to promote more interactions since non-profits receive great amounts of emails. Among informants there was a sense that more face-to-face and direct contact was needed. Communication among partner sites was totally lacking, and they did not share resources or expertise conducive to

improving their community technology work. Moreover, several of them stated that computer access was not "part of our job." Austin Learning Academy declared it had little to do with AFN work. Although the ALA website was hosted on AFN server, ALA decided to drop the AFN network by the end of 2005.

All sites provided unobtrusive computer and Internet access, and only one of them (an apartment complex) had installed filtering software. Four of the eight sites visited were public access sites, welcoming the general public to use the access terminals. Staff at Casa Marianella, ALLGO and Garden Terrace showed interest in having splash pages or portals with information of interest for their clients. None of the sites had computers in languages other than English. Casa Marianella, an immigrant shelter in the East site that hosts the computer station with highest use on the AFN's network, reported that they would greatly benefit from having tutorials in Spanish about how to open an email account, or find information about city bus routes. Finally, all partner sites reported needs for system and computers upgrades. This assessment of public access sites was the beginning of an effort to revamp the relations with partner community sites. The process was framed by the relocation of AFN in the DeWitty Center in 2209 Rosewood Avenue, in the core of the East side.

3.6. "*We were ahead of our times*:" The basic-need approach to public ICT access

Embattled by financial and organizational challenges, AFN has refocused operations on community sites serving distressed communities in the East side of the City. In 2005, a major event brought to light the importance public Internet access plays in the city, and how Austin Free-Net serves as a hub of these efforts. As the dramas of hurricanes Katrina and Rita played out at the end of the long, hot summer of 2005, and Austinites devoted themselves to disaster relief efforts, Free-Net was asked to help recruit and organize evacuee computer assistance volunteers at the Austin Convention Center

Shelter. Networking technologies became a critical component in the glue that connected people and social services to restored lives. AFN volunteers were among some of the first people to receive Louisiana evacuees, organizing a database for the local Red Cross and other services. Volunteers helped people to use computers to let loved ones know where they were, apply for FEMA benefits, pay bills online, register for Disaster Unemployment Assistance, set up and check e-mail accounts, etc. Working with the City's tech team, Free-Net enabled wireless, personal Internet connectors donated by AMD in shelters and housing facilities. AFN efforts were not unnoticed. Austin Chronicle awarded AFN "Best Katrina Evacuee Hookup" and the City made a $12,000 extra-donation for "disaster relief preparation." The recognition, contributions and donations sent a strong signal to AFN about other possible sources of operational funding for their programs: social services.

> "The foundations are a problem because they do not see the value of funding on going programs that have been proven and benefited people. They want to give small dollars for one year, and want you to do something new and innovative with the money. It's just insane. Long term programs are possible with funding from the city, the county and the state. These are the types of sources for basic needs, and I think we have to be considered a basic need…"[140]

Free-Net started attending meetings of the basic need coalition before Katrina through its fundraising effort with United Way Capital Area, a non-profit that matches donors with social service organizations to promote community investment. United Way focuses its work on health, education and financial sustainability in local communities, supporting the work of food banks, services for the elderly, legal services, job and training center. A Free-Net manager explains how the public Internet access organization fits in this group, and what the vision is behind this approach:

> "Public access is part of the basic needs for the same reasons that the city wanted to make computers available for people who did not have Internet service at

[140] Interview with AFN administrator, September 29, 2006

> home, so they can get jobs, information and services. More and more basic needs providers run their business online, and people would have to find information and apply for them services online.
>
> *What kinds of services can or should be offered?* [my question]
>
> We can teach these people about how to get information out of Internet and social workers can show them where. Basic computer skills like how to use the mouse, navigate fields on an online form, and typing accurately are important. These two things can make the experience of being at a computer more effective and enjoyable. These are basic things. How to look information online, how to use the keyboard, how do you evaluate what you're seeing. How to talk about yourself and your work history in a job interview. I have to say that a lot of this is workforce-oriented because there is so much of self-sustainability in having a job but there is more to it. There is health, medical services, buying online and more that the people can discover with these basic skills… We're not serving early adopters. We see people who come here with no knowledge of what a simple email is, and sometimes they can learn the concept but can't see the personal value to it yet…"[141]

Funding opportunities have primed public Internet groups to basic services and modes of operation. The basic service approach to access builds on a social service mentality that provides basic services to those in need. Minimal computer skills are a proxy for basic needs. It is up to the individual to discover other possibilities offered by the technology. The relation with the public is thought as similar to the one that operates between social service providers and their "clients." In an environment characterized by constrained resources, AFN has focused its training courses in basic computer skills, and renounced its role as an innovator.

> "There is always a trickle down effect from the people who have access to the people who don't. As [AFN technology manager] says, a software should be out two years before we try it because then we know the problems. It'd be convenient to wait and see how someone does the testing. We have seen a lot of applications passed. We have always been ahead of our times to get people to use things that we know are of value… but sometimes they have to see it from someone else…
>
> *Can't public access be this demonstration place?* [my question]

[141] Interview with AFN administrator, September 29, 2006.

> Yes, but what's going to happen is that we'll get people we're not targeting. We can have classes like Second Life or podcasting but we won't see the same audience..."

Under a linear conception of technological development, the access culture of community technology groups sets the boundaries for the abilities that users can develop through their participation in these programs. The practice, I argue, contributes to the social stratification of access. Training courses for the underserved are not comparable to the ones offered to the "information haves." This vision somewhat draws on the old digital divide framework but renounce aspirations to support access for the innovators.

4. CONCLUSIONS

This chapter has described the process of structuration and reproduction of the field of public access to new technologies in Austin, Texas, and how particular institutional formations arose in the context of the expansion of public ICT services in the United States, framing symbolic and material practices of organizations such as libraries and community technology networks in the provisioning of these services. At the national level, public ICT access emerged as a multiplicity of local initiatives seeking to advance diverse institutional agendas through a culture of open access. Academics and educators, technologists, community organizers, and to a lesser degree, members of public access channels contributed to early efforts to bring computers and Internet services to the public. These early efforts found support in local governments and cities that justified their actions with discourses of freedom of information and enhanced civic participation through electronic networks. Universities and user groups linked to locally-based technology industries spearheaded public access initiatives. In these early stages, activities of organizations such as free-nets furthering connectivity to the web did not distinguish between connectivity for public uses and individual, home access. Two structural forces are central to the organization and definition of the field nationwide.

First, since the early 1980s, corporate philanthropy has focused its activities on promoting the adoption of desktop computers and Internet through public libraries, contributing to the transformation of the social vision of the institution as a public access information system. In recent years, foundations have focused their donations on libraries in poorer and at risk areas. Second, the federal government fostered the growth of grassroots efforts in non-profit activities such as public education and civic engagement, realms not developed by commercial providers.

Different from the cable access era in which the state promoted public access through structural regulation that fostered and protected people's access rights to new media, during the Clinton administration this support only materialized in grants and funding activities that favored the construction of community technology groups around themes that blended access to education and promotion of economic development goals. In the 1990s, operating under this framework, libraries, community technology centers and networks became the main organizational forms in the field of ICT access, over other early players such as cable access groups and free-nets. Although the rise of organizations specialized in Internet access in the 1990s provided visibility to the field of public access as a space that promote citizens' engagement with new technologies, since the early 2000s ICT access groups struggle for the recognition of their work and field dynamics. Partnerships with other social institutions such as schools and youth centers have been adopted as mechanism to achieve sustainability while targeting specific populations. The closing of federal grant programs has made access organizations more vulnerable and extremely dependent on private and local funds. In this context, their activities have tended to be structured as short term programs in areas that are priorities for donors.

The Austin case study provides an in-depth vision of how these national dynamics unfolded at the local level. In Austin, local powers employed their economic, social and symbolic capital to craft a mode of social and economic organization in which the role of the local government recedes, while private initiatives and entrepreneurialism around technology are encouraged. The so-called "technopolis wheel" has shaped a form of governance that favors the networking of "social influencers" or individuals of higher accumulation of cultural, economic and social capital, leading to the creation of elite organizations such as technology incubators that act on behalf of Austin's citizens. Their main activity is to connect and build consensus between industry, academic institutions and the local government around a primary goal: promote economic development through technological diversification. The social agenda of the city has been framed as a quest for affordable living and quality of life, eluding deeper social equity issues and growing disparities in the city. ICT access initiatives emerged as an attempt of the city to fulfill economic development and quality of life goals. Following dominant federal policy frames of the time, the local government promoted a public-private partnership for the creation of a non-profit, Austin Free-Net, with the mission of promoting universal access to public information, primarily through libraries.

The discussion of the failed attempt of ACTV to provide public Internet access unveiled the fragmentation and organizational struggles that characterized the formation of the field of public Internet access. It also speaks to the constraints placed on access by institutional practices of providers, what I have called their different "cultures of access." Within ACTV, organizational changes provoked tensions between leadership and staff over what was perceived as a threat to diminished funding and resources available for video-production activities. In the larger context of the field, ACTV fought with other access groups such as community radio and the Austin Music Network for visibility,

local funding, and grassroots support. The formation of core Internet groups in the City such as Austin Free-Net and MAIN is explained by the alignment of their missions and visions with predominant policy frames of the Clinton's NII-Initiatives and the municipal government that highlighted universal access to public information and the spread of technological innovation as a primary goal. Different from other free-nets in the country, AFN organized mostly as a community network sponsored by the City to supply access at public spaces. Born in the aftermath of state regulation that preempted municipal involvement in provision of telecom services, AFN clearly defined its mission as non-profit action that supports and does not compete with private initiatives in technology.

Grassroots support for Internet initiatives mainly came from members of the creative economy and socially-minded activists who performed functions as city officers, heads and employees of web design firms and ISPs, and advocates of electronic access. They were the links of a network of organizations that saw in public access an opportunity to advance their goals. Freedom of information rather than freedom of expression was given as the main justification to exert their access rights through cooperative, non-profit action. Although digital divide problems were framed as an ethical dilemma calling for philanthropic actions of creative workers, the case of the participation of small ISPs shows that their actions were also driven by opportunities to create a market for their services. The spread of innovations is a function of access organizations that often blurs the fine between non-profit and for-profit action.

Federal and state grants were the most important support for the expansion of local public Internet at libraries and community sites. The local government and private donors played an instrumental role in the consolidation and maintaining public networks. However, as federal and state funding dried up, local government and corporations have become the primary funding resource of ICT access groups. Foundations have focused

their aid on libraries, while local government largely supports community groups which have grown apart and fragmented. Operating under such restrictive conditions, AFN has decided to focus its operation on the poorer segments of the population. Public Internet access has been reframed as a basic need of underserved communities. The basic needs approach to access has fostered a basic skill approach to access programs limited to basic computer and Internet skills. With fewer resources and with debilitated organizational capacity, ICT access organizations have renounced to their function as early adopters and diffusers of innovation such as wireless broadband. However, some of the same actors who initially worked building early community networks such as Austin Free-Net leapt into community wireless initiatives because they felt more identified with the innovation/ diffusionist framework of access. The next Chapter describes how stakeholders in Austin have structured public access to high-speed Internet through the Wi-Fi networks.

Chapter 6: Configuring Public Wi-Fi Access in Austin, Texas

This chapter addresses the question as how access cultures represented by different institutional forms of public ICT services have reconfigured public Internet access under a regulatory shift from policies that support community-based, non-profit and open-access initiatives towards regulation that promotes individual-based, commercial, and closed models of access through wireless broadband services. At one level, the discussion is a continuation of the argument and themes presented in the previous chapter about the reproduction and transformation of the field of public Internet access, providing a snapshot of systemic changes in the field as promoted by new regulation, and leading toward further fragmentation of public ICT initiatives. At another level, this chapter examines the process of adoption of a new technological platform – wireless fidelity (Wi-Fi) – that has emerged in recent years as an alternative solution to extend the provisioning and use of high speed Internet services. From a constructivist perspective (Dutton, 1999; Dutton et al., 2004), I have argued that new technology is a multi-layered category involving various applications (information, communication, transactions and access to other technological resources) and skills that enable different social uses and functionalities. Thus, access to new technology cannot be regarded as an unequivocal action and the product of individual, rational choice but rather it is better understood as the social process of configuring social choices and uses of new technology.

In examining the process by which different agents of the field of public access adopted Wi-Fi in Austin between 2003 and 2005, I shall describe the rationale and justification of their choices, notions of the public and assumptions about the social applications of the technology. An underlying theme in this discussion is how market-

driven policy discourses framed agents' choices and decisions about configuration of public Wi-Fi networks. As explained in Chapter Four, these discourses have primed the action of private providers in delivering Wi-Fi services to consumers in commercial hotspots, while ignoring or downplaying the role of non-profit action. Notions of the public as active audiences and producers have been replaced by one of rational consumers making decisions in the marketplace. The chapter starts by identifying the main stakeholders in Austin's public Wi-Fi, the rationale for engaging in the promotion and provision of these services, and the institutional arrangements that characterize their action. Then, the chapter explores the visions of the public and social function of the technology as articulated by providers and advocates of public Wi-Fi. Finally, drawing on previous work (Fuentes-Bautista & Inagaki, 2006; Inagaki, 2006), I reflect on how these new visions are reproducing an uneven geography of access in the city. This account draws from interviews with stakeholders, a survey of Wi-Fi hotspots and secondary data collected between 2004 and 2005.

1. STAKEHOLDERS IN PUBLIC WI-FI ACCESS IN AUSTIN

This section presents a map of public Wi-Fi initiatives in Austin by the end of 2005. I distinguish between supporters or advocates of public Wi-Fi, and organizations that provide or enable the service (Table 10). As discussed in the previous chapter, a distinctive pattern of technological development of Austin is how industry groups have fostered the creation of "support groups" that advocate for technological diversification and early adoption of new technologies in the city. In 2003, as the federal government launched its spectrum policy reform, considerably enhancing opportunities for broadband access through the unlicensed spectrum, research institutions and industry groups in Austin were debating about how to foster the growth of a new technological cluster of wireless industries. Such discussions led to the creation of open forums and organizations

that advocated for the adoption of public Wi-Fi in the City. Technologists and users groups were instrumental in creating momentum for the spread of the new technology. Many actors within these organizations were also workers of computer-networking companies and wireless firms based in central Texas. For instance, membership of the non-profit, user group Austin Wireless City Project (AWCP) came from wireless industries and Internet service providers.

Table 10. Stakeholders in Austin's Public Wi-Fi

Supporters of public Wi-Fi	Public Wi-Fi providers
User groups IC2 Institute at University of Texas Austin Wireless Alliance Electronic Frontier Foundation (Austin)	Austin Wireless City Project (AWCP) Less Networks Wireless Internet Service Providers Broadband providers City of Austin Austin Free-Net

It is difficult to pin down the exact date in which the first wireless connection was made in Austin's public space. Experiments in wireless high-speed connectivity in Austin's public spaces took place prior to Wi-Fi's debut in the consumer market. One such experiment was carried out in 1997 through a private-public partnership involving the non-profit, citizen organization Austin Free-Net (AFN), a local ISP – Outernet, the Austin Public Library, and the City government.[142] Through this collaboration, AFN succeeded in deploying a 3-Mbps wireless network connecting the Library's downtown location, city buildings, and the Outernet data center, enabling high-speed connection for public Internet access at the library. New wireless technologies would replace the older ISDN lines, providing service that was over 20 times faster, allowing "more computers at libraries, faster downloads, and easier hardware infrastructure administration."[143] However, high prices of wireless broadband equipment in the 1990s discouraged AFN

[142] Memo of AFN to OuterNet Connection Strategies, October 24, 1997. AFN Archives.
[143] Ibid

from pursuing further experiments with the technology in other Internet access sites in the city.[144]

A private firm enabled the first public Wi-Fi service in the city in 2000. Wayport, an Austin company pioneering paid or for-fee wireless Internet service in public spaces, turned the Austin-Bergstrom International Airport into one of the first airports in the country with wireless Internet connectivity for travelers.[145] Since 2000, Wayport and other commercial wireless Internet providers (most notably T-Mobile) have steadily built fee-based public Wi-Fi access sites in the metro area. This early expansion was concentrated in venues that were part of national hotel, coffee shop and restaurant chains, and the airport. In this period, public Wi-Fi was still removed from the everyday experience of the majority of computer users in the city. A new set of actors became visible in Austin's public Wi-Fi landscape between 2000 and 2001. Wireless enthusiasts and tinkerers began experiments, individually or in groups, installing amplified antennas or enabling Wi-Fi access points in coffee houses and restaurants of their preference. Their cooperative action engendered the vision of an open wireless space, free to end-users, as an alternative to the paid or for-fee model dominant in the city.

1.1. Wi-Fi user groups

By the end of 2001, Wi-Fi enthusiasts had organized around three main user groups. The Austin Area Wireless User Group (AAWUG), the Austin Wireless Group (AWG) and OmitNet were formed by early adopters of the technology attracting engineers, computer and software designers, media producers and other professionals, and workers linked to Austin's creative economy. All these groups set as their primary goal the promotion of public wireless broadband access. However, definitions about the

[144] Interview with Austin Free-net manager, August 11, 2004.
[145] Interview with City of Austin Airport Authority representative, August 6, 2004.

scope and nature of the enterprise varied among them. Members of AAWUG saw wireless broadband connectivity in public spaces as a desirable and almost natural extension of wireless LAN at home. As the group explained it, they became organized "because the access points on our own homes don't quite span to the areas we might want to be able to connect from".[146] Similar self-serving reasons informed the action of affiliates to the OmitNet group, which in late 2001 built ad hoc wireless links connecting homes of group members to the neighborhood coffee shop.[147] These experiences rapidly provided the vision of an open public wireless access that could work as an alternative to the for-fee wireless access already available at hotels, corporate coffee houses, and at the city's airport. A wider concept of access was embraced by the AWG, which defined its goal as "free Net access for all".[148] This group eventually evolved into the Austin Wireless City Project (AWCP), an umbrella non-profit organization formed in 2003 "to educate, advise, enable and assist operators of public spaces in providing free wireless hotspots to all residents of Austin and surrounding areas."[149] With a clear focus on "operators of public spaces," AWCP was born with the mission of spreading access by targeting organizations and institutions, not end-users.

Since 2001, the actions of user groups have raised concerns from Time Warner Cable, which questioned the rights of residential users to allow broadband sharing. SBC objected to the practice arguing security issues.[150] Curiously, in some cases, members of users groups were also workers of the wireless ISPs and broadband providers enabling for-fee hotspots. Knowing that the practice of opening closed broadband networks could

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[146] Austin Area Wireless User Group: http://aawug.org/. Accessed on 10/20/04
[147] Cara Anna (October 2, 2001) Free high-speed Internet access, anyone? *Austin American Statesman*
[148] Ibid.
[149] Austin Wireless City Project's mission. Available at http://www.austinwirelesscity.org/about.php. Accessed on May 20, 2004.
[150] Ibid.

upset established broadband providers, the Austin Wireless Group made a public statement, declaring that they had no intention of taking business away from these businesses:

> "…The reason we start these user groups is because the access points on our own homes don't quite span to the areas we might want to be able to connect from. Even the folks who use the wireless networks but don't put up amplified antennas still usually have wireless over broadband in their homes...So in most cases, freenets aren't taking business from the providers, we're just giving their existing subscribers more places from which to connect…"[151]

In this early stage of development of public Wi-Fi networks, the cooperative action of users set out not to violate the rules of the market by violating the limits that divide for-profit and non-profit action. On the contrary, as users highlighted, their cooperative action opened new business opportunities for established broadband providers. Following this rationale, between 2001 and 2003, Wi-Fi enthusiasts enabled a number of hotspots in coffee houses and other venues, but the deployment of these networks was still haphazard.[152]

1.2. Austin Wireless City Project (AWCP) and Less Networks

A strategic vision of network deployment emerged in 2003 with the creation of special purpose organizations for the provisioning and advocacy of the free-to-end user model of access. These initiatives sought to harness "the community-mindedness spirit" of volunteer and user groups with the drive of entrepreneurialism of local wireless startups.[153] The Austin Wireless City Project (AWCP), an organization composed of members of numerous Wi-Fi groups coexisting in town (user groups, startups, nonprofits, and technology advocacy groups), rapidly became the flagship entity of the so-called,

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[151] AWCG website. Available at http://www.austinwireless.net/cgi-bin/index.cgi. Accessed on 10/20/04
[152] Interview with Austin Wireless Project representative, May 11, 2004.
[153] MacKinnon, R. "Richard MacKinnon on building a community wireless organization." Muniwireless. Available at http://muniwireless.com/community/guests/396. Accessed on September 30, 2004.

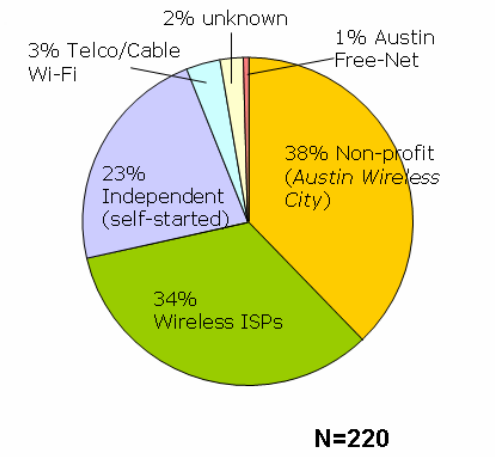
"free Wi-Fi movement." As explained by Richard MacKinnon, co-founder and president of AWCP, the group was organized to replicate the structure of an Internet Service Provider.[154] The organization had a strategic planning committee (the Board), an executive team (the Core), a sales force (the Walkers or volunteers that offered the service to the venues), hotspotters or installers, and the Caretakers that monitored and maintained the network. Less Networks, a software company founded by MacKinnon, designed and provided the software used in the operation of AWCP's network of hotspots throughout the city.

AWCP's strategy — Adopt-a-network — was modeled after the Austin Free-Net's "Adopt-a-site" program, which invited companies and organizations as donors to support public access sites affiliated with the Austin Free-Net. Mackinnon had become aware of the fundraising initiative during a challenge grant organized by Free-Net in 2002. Mackinnon, a technology professional and head of the networking and web company Rock Steady Networks, had offered a donation to Austin Free-Net.[155] This was the beginning of a series of exchanges between AFN and AWCP. In fact, both organizations also shared members of their leadership. By the time the wireless group was formed, two of its members, Jon Lebkowsky and Charlie Scott, served on the AFN board.[156] AWCP's Adopt-a-network encouraged commercial and public venues to become their own sponsors in lighting up public Wi-Fi networks. The model proved successful and within a year the number of AWCP-supported public Wi-Fi venues outnumbered those of commercial, for-fee venues.[157] Survey results show that by the end

[154] Savlov, M (June 11, 2004) The hotspot: How Richard MacKinnon and the Wireless City Project are making Austin the center of the tech universe again. Austin Chronicle.
[155] Interview with Austin Free-net manager, August 11, 2004.
[156] Ibid.
[157] Schwartz, J. (May 12, 2004) In Austin, Paving a Way Past Invisible Tollbooths. New York Times Section G, Page 2, Column 5

of 2004, AWCP was the single main Wi-Fi provider of the City, serving 38 percent of the hotspots in Austin (Figure 5).

Figure 5. Market of Public Wi-Fi Providers in Austin (2004)



Wireless ISPs were the second main providers. WISPs encompassed not only well known national players such as T-Mobile and Wayport but also local companies. More than one-fifth of public Wi-Fi services in Austin were independently operated by retail and service outlets that have self-installed wireless access points. All independent public Wi-Fi venues provide their service free of charge to end-users. They constitute 23 percent of all public Wi-Fi venues in Austin. Austin is a surprisingly small market for Wi-Fi services for large telephone and cable companies. There are only seven public Wi-Fi venues served by local exchange carriers and cable franchises combined. The low market penetration among this class of providers seems to be primarily the result of the abundance of free public Wi-Fi sites in Austin, which significantly reduces incentive among Wi-Fi users to choose for-fee service over free service.

AWCP's access model of public Wi-Fi was successful for several reasons. First, it offered free-to-end-user wireless Internet service supported or sponsored by the venues.

Second, AWCP's activities were carried out entirely by volunteers in collaboration with startups and broadband providers. Third, AWCP did not simply add wireless access devices to the wired broadband but did so in a manner that created managed Wi-Fi networks. This was made possible by networking all AWCP sites via open-source software specifically designed for this application by Richard Mackinnon's company, Less Networks. This allowed common user interfaces through a splash page that linked different Wi-Fi venues, network monitoring for problems and usage statistics, user verification system for security purposes, and portal sites with contents created by AWCP and sponsoring venues. Fourth, AWCP's collaboration with Wi-Fi venues allowed the organization to function as a demand aggregator, making AWCP a viable partner for the telecommunications companies supplying bandwidth to venues. Becoming a non-profit WISP was not an easy task, triggering some tension between the wireless group and broadband providers. An AWCP representative explained the situation in the following terms:

> "There is some resistance among corporate providers. In Road Runner for instance, they are divided about the way they will handle us. They think that if people share, there will be revenue lost. They want everyone to have their own connection however when you are a company, you share it with your employees. There is a distinction between residential and business services; they created the artificial distinction of who can share or not, this is the distinction between residential and business class... There are technological solutions to control, but if they apply them, there is the fear that they will ruin the hotspot business. I have explained it to them. The cost for them is massive customer desertion, and the market rules for who has the best policy. They recognize that they are selling their products in places where they were not before such as coffee places and restaurants. Someone else in the company wants to restrict but they have to figure it out. This is a challenge for them because the whole logic of the cable business is based on restricting. You can have all the channels through the connection but they applied restrictions depending on how much you pay. Road Runner is considering packaging services for us tailored to what we are doing. For instance, if someone says we want to join as a hotspot, they take us into the order. They

> take feedback from our installers about what we need. RR wanted to do it and has done it. SBC has manifested interest but not done it yet".[158]

Assuming the viewpoint of a start-up, AWCP bargained with wholesale broadband providers based on its growing share in the market of commercial venues. The breakthrough of the AWCP's strategy was to carve out a niche in the seemingly integrated market of broadband distribution, positioning itself as an intermediary between venues and cable companies and telcos. The grassroots silently took coffee places, bars, restaurants under their control, and they did it not by "selling" a new service but by demanding the attention of managers and owners of venues they visited as regular customers.

Members of AWCP also convinced business owners and managers of these places of the advantages of catering to Wi-Fi users. In doing that, the non-profit group appealed to the creative ethos predominant in Austin. Borrowing the popular motto of the town, "Keep Austin Weird," they promoted public Wi-Fi under slogans such as "Keep Austin Wi-Fi" and "Keep Wi-Fi Free." Such a promotion strategy built a natural connection between the technology and Austin's hip culture. Several informants of this study underscored that over the last 20 years, service businesses in Austin have expanded, catering to the needs of the high-tech industry. This close relationship has made owners of coffee houses, restaurants and bars very responsive to the needs of creative workers, increasing awareness and opening the doors of venues to Wi-Fi services. Members of AWCP consciously positioned themselves as part of the creative class, and claimed to be acting on its behalf, improving the quality of life in the City:

> "[In Austin] we have a creative class that needs to be taken care of. Without them, you wouldn't have all these free hotspots popping up…. We have to make housing affordable for them, the power structure has to fit for them, needs to be

[158] Interview with AWCP representative, May 25, 2004.

> liberal, we have to protect them, they are the creative class… same thing about wireless… we need to keep Austin Wi-Fi."[159]

Drawing on this type of discourses, AWCP positioned wireless groups as part of the technology avant-garde of Austin, a city that has branded itself as "the city of ideas." Technological diversification and entrepreneurial activism under a free-market mentality were also important ingredients in the public discourse of user groups, which ultimately drew increasing support from Austin's local powers.

1.3. Austin Free-Net

The emergence of public Wi-Fi hotspot and new community wireless groups in Austin did not catch Austin Free-Net by surprise. As previously mentioned, some members of AFN's leadership were also members and supporters of wireless groups. The rise of community wireless in Austin coincided with the internal process of "re-visioning" Free-Net, and the discussion about how the organization would handle innovations such as wireless technologies and social software became a divisive point in the agenda. On the one hand, AFN managers and staff pointed out that the majority of Wi-Fi deployments were taking place in commercial spaces in the most affluent areas of town. They were not sure how AFN's work could fit into the venue-sponsored model patronized by AWCP. "We work with underserved communities, so our commitment is to public space and non-profits," argued one of the managers. On the other hand, board members that advocated for adoption of the new technology contended that part of AFN's job was exactly to devise how the new technology could be used to further access for those who lack the service. They also believed that supporting open access through Wi-Fi networks was a matter of public interest, and that Free-Net ought to contribute by installing open Wi-Fi networks in the community: "Wi-Fi should be a sort of public

[159] Interview with AWCP representative, May 25, 2004.

infrastructure, just like the streets. The Wireless City's model is very good. The venue pays for the service and makes it available to the public, someone pays for them but the resource is shared."[160]

AFN and AWCP partnered to light-up two communities sites in 2004. The selected sites were: Resistencia Bookstore, a non-profit bookstore and Chicano/a cultural center, and ALLGO, a Latino/a gay and lesbian advocacy group. These places were chosen since they regularly hosted community gatherings and events that would attract potential users of the technology. Besides these two sites, the executive director of AFN took personal interest in promoting the service in some commercial establishments to the east of the Interstate highway. Only one of them, Café Mundi, decided to adopt the technology. I visited these places and talked with their managers about the experience.

The non-profits reported small number of users, and they complained because they had received no additional computer equipment to offer the service to those who do not have laptops. AWCP was responsible for the installation and technical support of both sites. In the coffee house, the owner – an artist who regularly sponsored community gathering at the place – was very satisfied with the results. She paid for the cable broadband service and AFN donated the wireless access point and installed it. She recognized the value of the service for both business and community access. However, she would not consider placing a computer terminal at the location for issues of space, cost and maintenance of the equipment. Based on these pilots, internal discussions continued, with considerable differences emerging between camps. An AFN member who advocated for Wi-Fi services argued:

> "Public housing is an ideal place to use wireless, for instance. Of course that this kind of program has to be pretty fleshed out, and needs to be designed understanding the needs of people that live in poverty. They are a lot of middle

[160] Interview with AFN board member, June 4, 2004.

> class assumptions built onto access programs. There is little thought put into Wi-Fi so far. The community centers are other natural places. I hope that AFN and AWCP can partner-up in East Austin projects. We have to do some re-thinking of AFN programs. Free-Net mission is pretty clear but how is this mission implemented has been a challenge..."[161]

The problem of access to devices and cost of equipment were the main points discussed. Some informants believed that under the severe budget constraints faced by the organization, investment in laptops and basic networking were not justified. Laptops and other wireless devices were "things of the privileged" and for those who could afford it. There was no point to discuss about developing a program featuring these technologies. Free-Net should wait and monitor the "testing" of the technology.

> "For the constituencies Free-Net works with, the equipment is still important. We can't expect them to have laptops or other form of wireless devices. Although equipment is getting cheaper overtime, we are seeing the increase of public coming to the DeWitty Center, which is a barometer for need of public access in the City. People call even from outside Austin to find what resources are available here. This is a constant reminder that there is still the need there for people to have access. Poor people don't have income to buy equipment but they in fact know that they need computers for their children. It will be helpful to have stations that people can use…There is also need for education among small businesses. Owners in East Austin tend to be shy, and feel distant from wireless, there is the perception that it's expensive and people won't use it, or they don't want to spend extra money buying it [the broadband]. It's a hard sell sometimes..."[162]

As discussed in Chapter Five, under severe budget constraints and reduced organizational capacity AFN was battling to keep up with the operation of their public sites. Staff members insisted on focusing efforts and resources by going back to "the core" mission, serving poor populations. This vision that I have described as "the basic-need approach of access" was finally adopted when wireless advocates resigned from Free-Net by the end of 2004, and the organization stopped considering Wi-Fi access for its community sites.

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[161] Interview with AFN board member, June 4, 2004.
[162] Interview with Austin Free-net manager, August 11, 2004.

1.4. Wireless Internet Service Providers

By the end of 2003, local startup companies also became visible players in Austin's public Wi-Fi market. Many of them supported the venue-sponsored or free-to-end-user model, and they did so to promote their businesses. As the owner of a local WISP and members of the wireless user group explained: "From a startup perspective, how would you go against T-Mobile? Wayport got there, T-Mobile is there, but I can't think of anybody really making money in a paid model."[163] Some of these commercial Wi-Fi providers offered their services for free to the end-users, while others made it available at no cost for both end-users and Wi-Fi venues. The latter sometimes recouped their investment by selling collateral services to venues such as network security and maintenance, or web content development.

The symbiotic relationships formed between commercial bandwidth providers, nonprofits, and wireless ISPs can be understood in light of the extensive contacts these organizations have had with each other in the last few years. One of the primary venues for such contacts was a roundtable discussion of Austin and Central Texas' economic future, hosted in 2002 by the Innovation, Creativity & Capital Institute (IC2) of the University of Texas at Austin (UT).

1.5. University of Texas at Austin

Building on the "technopolis wheel" tradition, in 2002 IC2 invited community leaders and representatives of Austin's ICT businesses, venture capital companies, and UT's Wireless Networking & Communication Group at the Engineering School (WNCG) to brainstorm ideas to design a new plan that would reproduce the successful experience that brought the semi-conductor industry to Austin in the late 1980s.[164] Throughout the

[163] Interview with Austin Unleashed, Inc. executive, July 27, 2004.
[164] Interview with IC2 Institute representative, August 5, 2004.

course of the IC2 roundtable discussion, participants brought attention to the blooming wireless businesses in Central Texas, suggesting that Austin was ripe for becoming a successful wireless milieu. The roundtable asked IC2 to produce a report, *Austin's Wireless Future*,[165] on the wireless businesses in the region and to formulate strategic recommendations for the region's economy. The report recommended supporting local wireless firms by creating synergies between the wireless, semiconductor, computer, and digital media industries, and by training qualified technical and professional workers for the wireless industries. The report also advocated that public Wi-Fi networks can serve as a vehicle to showcase the technology and promote the adoption of wireless devices.

Participants in the IC2 roundtable subsequently formed the Austin Wireless Alliance (AWA) "to develop, sustain, and promote Austin as a global leader in business activity, technical innovation, and community participation within the wireless industry."[166] Founding members included two University of Texas' institutes (IC2 and the WNCG), the Chamber of Commerce, and companies such as SBC, Tuanis Technologies, and Metrowerks. AWA quickly understood that carrying out its mission entailed even broader outreach and greater collaboration with other stakeholders. The organization saw the growth of public wireless networking in Austin as a marketing tool and as an opportunity for wireless businesses to leverage resources.[167] As a result, AWA invited Richard Mackinnon, the chairman of the volunteer Wi-Fi organization Austin Wireless City Project, to sit on the AWA steering committee, crediting the work of AWCP in expanding public Wi-Fi connectivity in Austin, and promoting collaboration between the nonprofit group and local wireless industries. Mackinnon joined the group in

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[165] Evans, E., Lebkowsky, J., Welter, L., Hung, G., Mayfield, D., and Gangadharbatla, H. (2004, January). Austin's Wireless Future. Austin, TX. Accessed on 01/250/04 http://www.ic2.org/publications/AustinsWirelessFuture.pdf

[166] Austin Wireless Alliance's mission. Available at http://austinwirelessalliance.org/about.html.

[167] Interview Austin Wireless Alliance representative, August 14, 2004.

2005, while Erin Defosse, chairman of the Austin Wireless Alliance became part of the leadership of the wireless user group.

1.6. City of Austin and Austin public Library

By 2004, the visibility of the Wi-Fi deployments of the non-profit user group, Austin Wireless City, attracted the attention of the city government officials.[168] City officials believed that the software developed by Less Networks would be a practical solution to the potential security issues involved in opening the city's Wi-Fi networks to the public Internet connection. The partnership between the city and AWCP deployed public Wi-Fi networks in city facilities (public library branches, parks and squares, and public buildings). According to city officials, the city government's involvement in Wi-Fi deployment must remain restricted to the services at city-owned facilities. As discussed in Chapter 4, the rationale behind this limited scope of Wi-Fi provisioning was that the city's public Wi-Fi networks should not operate in competition with the private sector in order to avoid hindering private-sector initiatives.[169]

But even before the City technology management office considered lighting up Wi-Fi connectivity, Austin Library's staff enabled Wi-Fi access at the central library and the history center downtown. The initiative was not the idea of librarians but of members of the Libray's tech team who thought that mobile broadband connectivity would be beneficial for library staff and the general public:

> "…back then (in 2002) we had weekly concerts in (Wooldridge) park. One day I saw hundreds of people sitting under the trees and having lunch and we thought, what about if we wouldn't have to go back to the office to check the email and do some work, and thought all these people out there could do it as well. That's how I got the idea. I carry my PDA all the time and it's the way how I communicate with the office all the time… so just probably because this park is across the

[168] Interview with City communication and technology manager, August 9, 2004.
[169] Ibid.

> street, we started thinking of Wi-Fi. The Library, the Wooldridge park, and History Center were all lighted at the same time…"

City "techies" rather than local officers and regulators were the first to think about extending broadband access through the unlicensed spectrum. In 2004, through partnership with the Austin Wireless City Project, and with donations of wireless companies, WISPs, and Schlotzsky's –a local franchise turned into a enthusiastic promoter of free Wi-Fi – the library system deployed Wi-Fi connectivity in its 22 branches.

1.7. Non-profit action as organizer of the public Wi-Fi market

In June 7, 2005, when Intel announced the results of its annual survey of "The Most Unwired Cities", users groups, start-ups, wireless and computer industries and the local government celebrated the placement of Austin as third in the rank of Wi-Fi *mecas* in the United States.[170] For many of them, the announcement was also the victory of a home-grown business model based on bandwidth sharing and open access to the unlicensed spectrum. By the end of 2004, 74 percent of the city's hotspots had adopted the venue-sponsored or for-fee model patronized by wireless user groups (Figure 6). The popularity of open Wi-Fi access was symptomatic of important changes in the local broadband market. In the capital of Texas, broadband providers modified their user contracts allowing business users to share broadband access with their customers and the general public. High demand for these services among creative workers, intense networking of stakeholders around the promotion of public Wi-Fi networks, and the action of the non-profit group, Austin Wireless City, were the forces behind increasing open access through the unlicensed spectrum. Cooperative action and collaboration among stakeholders facilitated this process.

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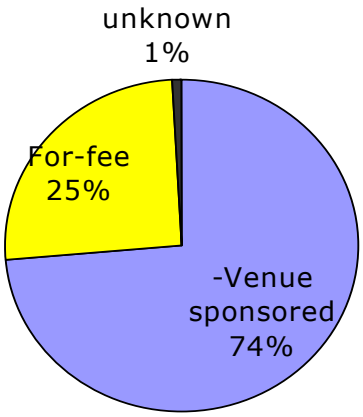
[170] Intel news release. Seattle Is 'Most Unwired City' In America. Accessed on June 10, 2005 at: http://www.intel.com/pressroom/archive/releases/20050607corp.htm

Figure 6.- Wi-Fi access in Austin (2004)



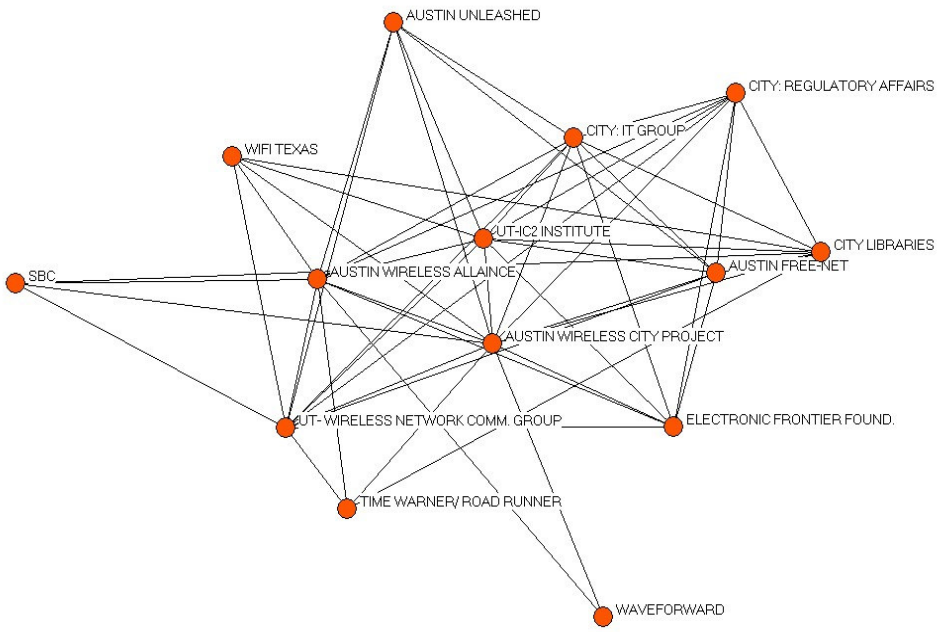
N=220

Source: Fuentes-Bautista & Inagaki, 2006

The social network analysis of wireless initiatives in Austin identified 29 institutions[171] involved in the public wireless landscape of the city, representing nonprofits and user groups (n=6), commercial providers (n=10), business associations (n=3), educational and research institutions (n=6), and the local government offices (n=3). The network of relationships presents a core made up of 14 organizations with links closely tied to each other, and 15 isolated actors with one tie to the rest. Figure 7 shows the graph of collaborative relationships reported by the core 14 organizations. Links between organizations are measured by the presence (1) or absence (0) of four possible types of relationships: funding (giving or receiving funds), technical cooperation (including in kind donation for installation of donated equipment), visioning, and volunteer cooperation.

[171] The list or network of organizations is included in Appendix V

Figure 7. Austin public Wi-Fi: Collaborative relationships among core organizations



The non-profit AWCP was credited by informants[172] as the main site of collaboration among different actors engaged in the expansion of public wireless networks in the city. Informants described the organization as a collection of Wi-Fi enthusiasts, industry workers (from large firms to start up companies), and community leaders who have displayed a strong volunteer effort with an entrepreneurial spirit. Research and networking work developed by research institutions of the University of Texas at Austin campus were cited as the second most important site for collaboration. UT served as a forum where actors exchanged information, ideas and visions that have promoted the development of public Wi-Fi in the city. Centrality scores in Table 11 confirm that the focal point of the network is composed by the AWCP, the wireless

[172] The social network questionnaire was answered by 22 informants, members of 18 organizations. Informants were identified through a snowball-sample technique, involving members of Wi-Fi provider and supporter organizations.

business association (AWA), and research institutions, a pattern that suggests the existence of a core network organized around efforts of volunteerism, entrepreneurial initiatives and research

Table 11. Eigenventor centrality scores - Core Wi-Fi organizations

Organizations	nEigenvec.
AWCP (non-profit)	61.97
Austin Wireless Alliance (Business association)	58.38
University of Texas Wireless Networking & Communications Group	47.92
IC^2 Institute at University of Texas	46.68
City of Austin, Com & Tech Management Dept (City IT Group)	38.31
Austin Free-Net (non-profit)	38.29
Austin Unleashed (local WISP)	35.22
Electronic Frontier Foundation - Austin (advocacy group)	31.29
City of Austin Public Libraries	28.58
City of Austin, Telecommunication Regulatory Affairs	28.33
Time Warner Cable Austin/Road Runner (TW/RR)	28.22
WIFI-TEXAS (local WISP)	19.11
SBC	14.60
Waveforward (local WISP)	11.37

Answers to the social network survey revealed that the main forms of collaboration among organizations were "visioning and volunteerism." Interviewees praised the non-profit, user group AWCP for its demonstrated ability to mobilize and organize volunteers, funneling resources, ideas and visions from different stakeholders. Informants believed that the leadership of the AWCP was clearly expressed in the popularity of the venue-sponsored or free-for-the-end-user model of access in the city. The majority of informants identified the AWCP as the most vocal advocate of the idea of "free Wi-Fi". This vision and the dynamic action of the AWCP actually persuaded Time Warner Cable to allow commercial customers such as coffee-shops and bars to open their wireless networks to the public. According to an executive of Road Runner/Time Warner, the company marketed a product (Speed Zone) to commercial customers interested in becoming hotspots, and initially the company "did not think that

wireless access should just be open to the public."[173] However, the firm modified this policy in 2005 working with the AWCP. A Road Runner/ TW executive put it in the following terms:

> "…[In Austin] there are many groups that are proponents of free wireless, and we still wanted to participate. If you didn't play on the same playing field as they did, then you would be out. They forced our hands. Austin is a different environment because of that. If you go to any other city in Texas, I don't think you will find that […] and we'd like it to stay within the city limits…[174]

Time Warner cable, which typically acts as a last-mile carrier for residential and business customers, played the role of network backhaul selling broadband connection to many AWCP venues that did not previously subscribe to the service. Typically, AWCP volunteers and RR/TW personnel worked together in assessing the sites and installing the network. The company considered that this relationship was a kind of technical collaboration. In this way, TW provided broadband and promoted its broadband services at the AWCP sites as well as at Speed Zones (Illustration 2).

Illustration 2. Road Runner ads at AWCP sites and the company's hotspots

[173] Interview with Road Runner/Time Warner executive, October 13, 2004.
[174] Ibid.

From its dominant position as incumbent telco in Texas, with important stakes in the cellular phone market through its companies first Cingular and then Verizon wireless, Southwestern Bell developed a different approach to the business practice of bandwidth sharing in Austin. SBC was somewhat dismissive of the non-profit group and less open to collaborate with it. They did not see the user group as a threat to their larger plans to growth in the market of mobile broadband via 3G telephony.[175] With the eye on the larger picture of mobile services, Wi-Fi was not assumed to be a wireless service per se but an "access transport service" that would be attached to DSL services.[176] In other words, so far as SBC could sell DSL services, they would not enforce restrictions on sharing broadband access. Austin was taken as an atypical case, "a savvy technical market with thirst for broadband."[177] However, municipal attempts to provide wireless broadband services were a far more delicate subject for SBC. When asked about the matter, a company executive replied:

> "SBC has no opinion… My personal opinion is, as a taxpayer, I don't want non-profit, city government building networks and having no clue how they're going to manage them… If municipalities want to blanket their city with Wi-Fi coverage, I believe there is more cost effective technology to do that… we would be more than pleased to provide the DSL connectivity to the thousands of access points necessary in order to cover the city. We stand ready to provide that kind of service. I think our cable competitors would love to do that as well. I don't think anyone could afford the tax base that would result from that kind of ubiquitous coverage. So, I'm a bit skeptical of that…"[178]

The business perspective on municipal wireless draws a clear distinction between government "non-profit" action and private, for-profit provisioning of the service. As referred in Chapter 4, in 2005 SBC became the main force behind legislative attempts to

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[175] 3G is third-generation technology in the context of mobile phone standards. The services associated with 3G include wide-area wireless voice telephony and broadband wireless data, all in a mobile environment. In marketing 3G services, video telephone has often been suggested as the killer application for 3G. Providers offering wireless broadband services via 3G operate through a licensing system.
[176] Interview with SBC Labs' executive, October 3, 2004.
[177] Ibid.
[178] Ibid.

ban municipal involvement in wireless broadband projects in Texas. In this environment, and given the previous history of anti-municipal telecom legislation, the City of Austin and the City public libraries also welcomed technical collaboration with the AWCP and startups. Wi-Fi Texas, a young WISP, donated the wireless access points that enabled Wi-Fi connectivity in the main public libraries of Austin.[179] Less Networks, the for-profit arm of WNCG, made available the software that runs the public wireless interface at libraries and all other city facilities. The city benefited from the obvious reduction in the cost of deploying wireless access. Meanwhile, the startups and nonprofits considered that these efforts increased their visibility and credibility in the community, potentially opening new doors for their operations. Wireless startups saw partnership with AWCP as an effective vehicle to promote their services and to seize business opportunities. As explained earlier, some of these firms sponsored the installation of wireless access points at venues, catering to them with services such as web hosting, software design and webpage development.

2. VISIONS OF THE PUBLIC AND USES OF THE TECHNOLOGY

I have argued that the conception of technology as a social system can be better observed through the analysis of institutions and social relations that surround technological systems. Thus, digital gaps can be understood as the byproduct of uneven systems of social relations built into the provisioning and use of new technologies. One important aspect of this process is the vision that providers and designers of ICT systems have about users of these services. These preconceptions are framed by regulation, through market analysis or by the simple exchange of ideas between agents, reflecting their organizational culture and social position. Notions about the user may be explicit as elicited in market research, or implicit in the organizational dynamics of technological

[179] Interview with IT manager, Austin Public Library, July 28, 2004.

organizations. All these realms constitute an important space for observing and understanding what social relations are supported by ICT providers.

Policy discourses on wireless broadband have framed users as "customers" of venues such as restaurants, hotels, bars, airports. In my conversations with stakeholders in the field of public access, I inquired about their target users or customers in the changing environment of broadband access through the unlicensed spectrum. I asked them to characterize the users of Wi-Fi services and the kind of applications they commonly use in their services. Several target groups emerged from these conversations. Table 12 summarizes the visions of Wi-Fi users by stakeholders.

Table 12. Perceived target customers/users of public Wi-Fi services

		Venues	End-users		
	ORGANIZATIONS	Wi-Fi venues	Business people	Technology savvy users	Citizens in general
Providers	AWCP/ Less Networks	*		*	
	Austin Free-Net			*	
	Commercial WISP 1	*	*		
	Commercial WISP 2	*			
	Bandwidth provider 1	*			
	Bandwidth provider 2	*			
	City government unit 1		*	*	*
	City government unit 2			*	
	Public Library			*	*
Supporters	EFF			*	*
	IC2 Institute	*		*	
	Business association	*	*	*	*
Total		7	3	8	4

The majority of the informants characterized Wi-Fi users as technology savvy people, owners of personal, wireless devices (laptops, PDA, palm pilots and blackberries), and a young crowd of hip, broadband-thirsty users who want and enjoy the advantages of mobile communications. Interestingly, Wi-Fi providers equally regarded commercial venues and end-users as main target of their services. In fact, commercial

venues were the main target of Wi-Fi providers with the exception of the City, public libraries and Austin Free-Net. The non-profit, wireless group AWCP spotted both venues and their "customers" as targets of its services. By targeting venues, AWCP set out to fulfill its mission to ensure and enhance "the availability and quality of public free Wi-Fi in Austin." [180] As previously discussed, AWCP had developed a symbiotic relationship with wireless ISPs, and with LessNetworks in particular. LessNetworks' goal was to sell its software and services user and community wireless groups, phone and cable providers, and commercial venues who wanted to provide open Wi-Fi access.[181] The business model developed by LessNeworks and other local WISPs built on the Adopt-a-Network program promoted by AWCP, transferring the cost of the service to the venue, and offered the service as an "amenity" to "customers" of the venue.[182] Local WISPs were also opened to partner with phone and cable companies to provide wireless broadband at residential areas and condominiums, franchises, and local businesses. Wi-Fi Texas, a successful local WISP emerged as national wireless provider catering to local franchises such as Schlotzsky's and Whole Foods. Other WISPs characterized users of their services as non-profits and community service groups.[183]

Operating under the same commercial rationale, the non-profit AWCP and local WISPs considered that enabling a wireless signal was enough to grant access to the public. The underlying assumption is that access relies on the capabilities of the user (e.g. owning personal devices, having the skills and information) to make use of these services. During my fieldwork, I visited 53 venues and found only three cases in which managers or owners had set up computer terminals for public use. In two of them, the

[180] Interview with AWCP representative, May 25, 2004.
[181] Ibid.
[182] Interview with Wi-Fi Texas representative, August 31, 2004
[183] Interview with representative of Austin Unleashed, July 24, 2004.

computers were old and only allowed web navigation functions. A local franchise, Schlotzsky's Deli stands out as the main commercial cyber-hub in town, offering Internet access through its Wi-Fi enabled "Cool-Cloud" network and "Cool Deli Computer Stations."[184] The initiative is part of a business strategy to attract business customers and workers of technology companies to their restaurants.[185]

Non-profit providers found difficulties in identifying Wi-Fi users as the main target of their efforts. Actually, Austin Free-Net regarded its target users and Wi-Fi users as mutually exclusive groups. AFN characterized Wi-Fi users as "information haves," "white people with laptops, PDAs and mobile phones," and residents of the most affluent areas of town who "have time" to spare in coffee shops and restaurants. Calling attention to the relationship between communities served and the spatial patterns of deployment of hotspots in the City, an AFN manager observed: "…the question is where they'll continue expanding hotspots, and what is the definition of public space they are using? They should look into that…".[186]

Although AFN was critical of the work that AWCP and local WISPs were doing promoting wireless access at commercial spaces, AFN felt lost about how to articulate a different vision of the technology. When asked about other forms in which Wi-Fi technology could be used to enhance broadband access, an AFN manager talked about enabling connectivity at places such as bus stops and family literacy programs. However, the vision of services offered remained limited to the provision of mere connectivity. Although city officials and libraries coincided with Free-Net in characterizing Wi-Fi users as "information haves," local government informants highlighted the importance of making open access available in city facilities, public parks, and libraries as a way to

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[184] "Cool cloud for a Cool deli." Schlotzsky's website. http://www.schlotzskys.com/wireless.html
[185] Interview with Wi-Fi Texas representative, August 31, 2004
[186] Interview with Austin Free-net manager, August 11, 2004.

extend the service to the general public. Considering problems of cost, liability and security of the equipment, the Austin library decided not to offer laptop check out services. Neither did the library seek to expand their public computing terminals, and training programs employing wireless broadband connectivity and devices. The tech team proposed to work on an interface to make the Library catalogs available to PDA users. When asked about how the benefits of Wi-Fi connectivity could be extended to patrons without laptops, a library officer shared this anecdote:

> "We get some interesting cases here... Some people show up at the library with desktops and monitors asking to use our power and the wireless. Once I got to talk to them at the History Center, and I figured out that they just have dial up at home. Have you ever tried to stay current on Microsoft patches on a dial up? You have to allocate a couple of days a month to do it! They bring their computer here, update and patch their system in 15 minutes rather than in 6 hours. It has happened more than once. If you have cable at home you forget that there are many people out there with dialup ISPs…"[187]

More than an example of the advantages of open broadband access at the public library, the anecdote speaks of the depressed demand for high-speed services, and the difficulties that even some "haves" face to interact and remain active in digital environments that require more bandwidth to run online applications. Can the market of wireless broadband services contribute to extend more equitable access? With market research in hand, an executive of SBC Labs provides an answer in the following terms:

> "…Fast Internet access, email access, instant messaging, those are the three big hitters right now. Future applications are ever faster music downloads, video downloads, and voice over Wi-Fi. I like to call these services "next generation pay phone." Nobody uses pay phones anymore, because of cellular phone. Well, cellular is going to have a little competition from wireless Wi-Fi, voice enabled, put your earphone in your laptop and then you're doing voice over the internet. This is the future …Users? Young, internet savvy, generally male, as opposed to female, and mobile professionals… Usually, the young internet savvy consumer will pay out of their own pocket. The young professional will have their business pay. Kind of like the original cellular model, you know, seventy cents ($0.70) a

[187] Interview with IT manager, Austin Public Library, July 28, 2004.

minute. I can't afford this myself, but my business gives me a phone, I'll use it…"[188]

Between the reality illustrated by the anecdote of the library officer and the vision of the wireless broadband future offered by the SBC executive, one can appreciate the growing gaps emerging along the tiered access structure characteristic of the current configuration of Internet services in the country. Just as the pay phone has been replaced by the cell phone, eluding any type of public service function, in the eyes of broadband providers, high power, mobile computing devices have further personalized and commoditized high-speed Internet access. In other words, convergence of video and voice through ever faster, download capabilities only target consumers who can afford to pay premium services. Another angle about how market dynamics frame the relationship between the technology and users is provided by the vision of owners and managers of Wi-Fi venues. The diffusion of public Wi-Fi in Austin based on the hotspot architecture fundamentally relied on the willingness of various facilities to install these networks, making them accessible to the public. By the end of 2004, the majority of hotspots in the city were commercial establishments (See Table 13).

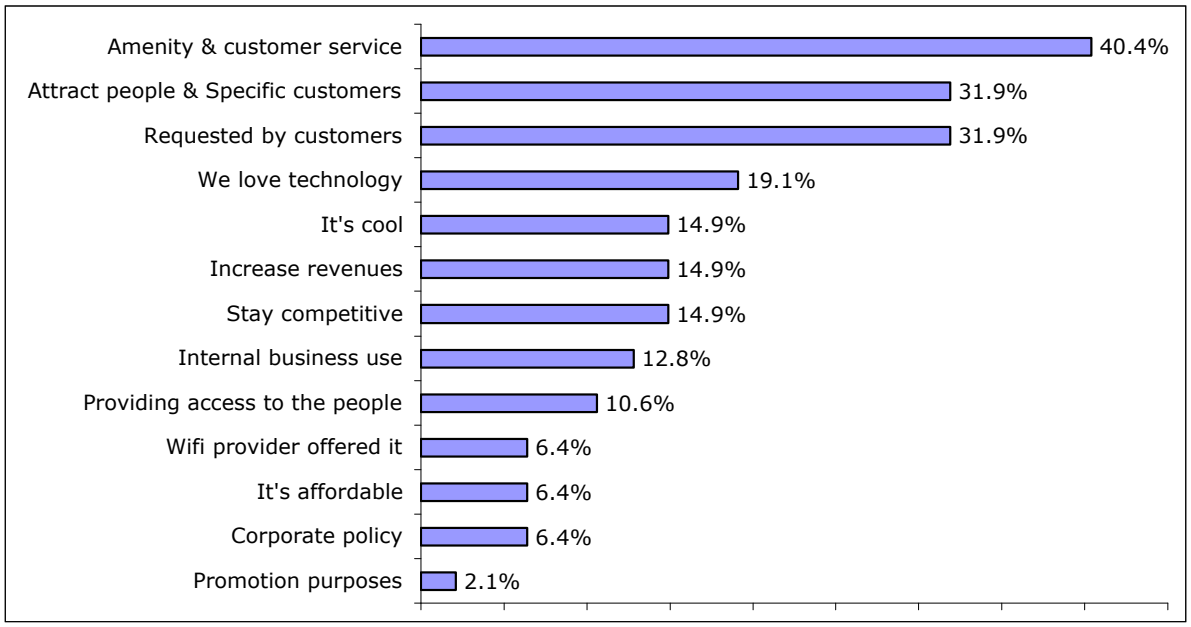
Table 13. Hotspots in Austin by Type of Venue (2004)

Provider	Number	Percent
restaurant & bar	77	35.0%
coffee house	60	27.3%
lodging	26	11.8%
library	21	9.5%
store	18	8.2%
Non-store service	7	3.2%
park & square	5	2.3%
public building	3	1.4%
Non-profit org	2	0.9%
airport	1	0.5%
Total	220	100%

[188] Interview with SBC Labs' executive, October 3, 2004.

A survey of Wi-Fi venues (n=47) asked the owners and managers of hotspots in Austin to identify the main reasons for adopting Wi-Fi at their facilities.[189] Clustering each unique response, I identified a total of 13 main reasons behind the deployment of Wi-Fi venues (Figure 8). The most frequently cited reason for offering the service was to add an "amenity" or to enhance "customer services." Wi-Fi is deemed an additional service on top of businesses or services that the venues regularly offer to their patrons and customers.

Figure 8. What were the reasons for adopting Wi-Fi?



n = 47

The category, "Attract people & specific customers," indicates that the venues recognize a strategic value in Wi-Fi provision to their commercial and institutional interests. Compared to the somewhat vague descriptors – amenity and customer service, this reason is a firmer expression of venues' expectation that Wi-Fi services can work as

[189] An open-ended question elicit up to five reasons to provide Wi-Fi services to the public. See venue survey questionnaire included in Appendix I.

a tool to increase customer traffic, thus positively contributing to the commercial or institutional goals of the establishment. However, evidence is non-conclusive about the financial impact of Wi-Fi provision on the venues. Only 27.8% of the respondents agreed that their "revenues have increased because of Wi-Fi."

The popularity of the category, "Requested by customers," underscores the presence of a critical mass of early adopters in Austin. A reason for adoption that perhaps applies more to Austin than to many other cities is, "We love technology." In my fieldwork, I encountered several venue owners and managers who were technologically savvy. Some of them not only expressed enthusiasm over new technologies but also had professional experience in the IT sector. Although these techie individuals were a minority in the sample, their presence can be seen as a typical aspect reflecting Austin's nature as a high-tech city. Finally, it should be highlighted that only 10.6 percent of the respondents (n=5) considered "Providing access to the people" a reason for offering Wi-Fi services. The facilities they represented were two city-owned sites, a nonprofit community meeting facility, one of the two wireless-enabled Free-Net sites (Resistencia Bookstore), and Café Mundi, a coffee shop located in the East side. The identification of Wi-Fi service with any kind of public access goal was thus relatively weak among the respondents.

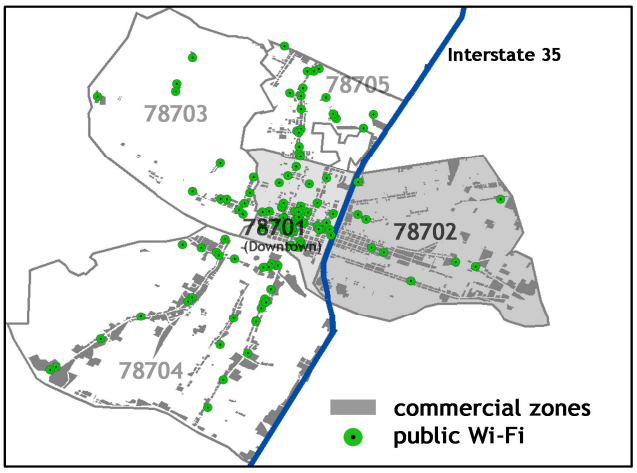
To summarize, the adoption of Wi-Fi service in Austin has been driven by a view of Wi-Fi as an additional amenity with positive impacts on customer/user traffic at commercial venues, rather than by the idea of appropriating wireless technology for improving public Internet access for the general public. Under this commercial rationale, public Wi-Fi can be characterized as an economic development tool to support local businesses. The outcome is also consistent with the nature of commercial venues, which make up for the overwhelming majority of Austin's public Wi-Fi spaces (88%). The next

section discusses how the predominant commercial rationale is reflected in an emerging, uneven geography of access in the city.

3. THE UNEVEN GEOGRAPHY OF PUBLIC WI-FI ACCESS

Previous work on the geographical patterns of public Wi-Fi networks in Austin has found that the deployment of hotspots in the city between 2004 and 2005 was mostly supported by commercial venues (Fuentes-Bautista & Inagaki, 2006). However, as discussed by Inagaki (2006), the correlation between commercial zones and hotspot developments is only significant in the most affluent zip codes of the city, located at the west of the Interstate 35 (I-35) (Figure 9). The results speak of how historical socio-economic divides of the city played into the configuration of public Wi-Fi networks. In this section, I will elaborate on these findings by focusing on how stakeholders explained and justified the limited penetration of public Wi-Fi networks in Austin's East side, and how they viewed the possibility of extending the service to the poorest areas of the city.

Figure 9. – Hotspots in Austin and commercial zones in the City (2004)

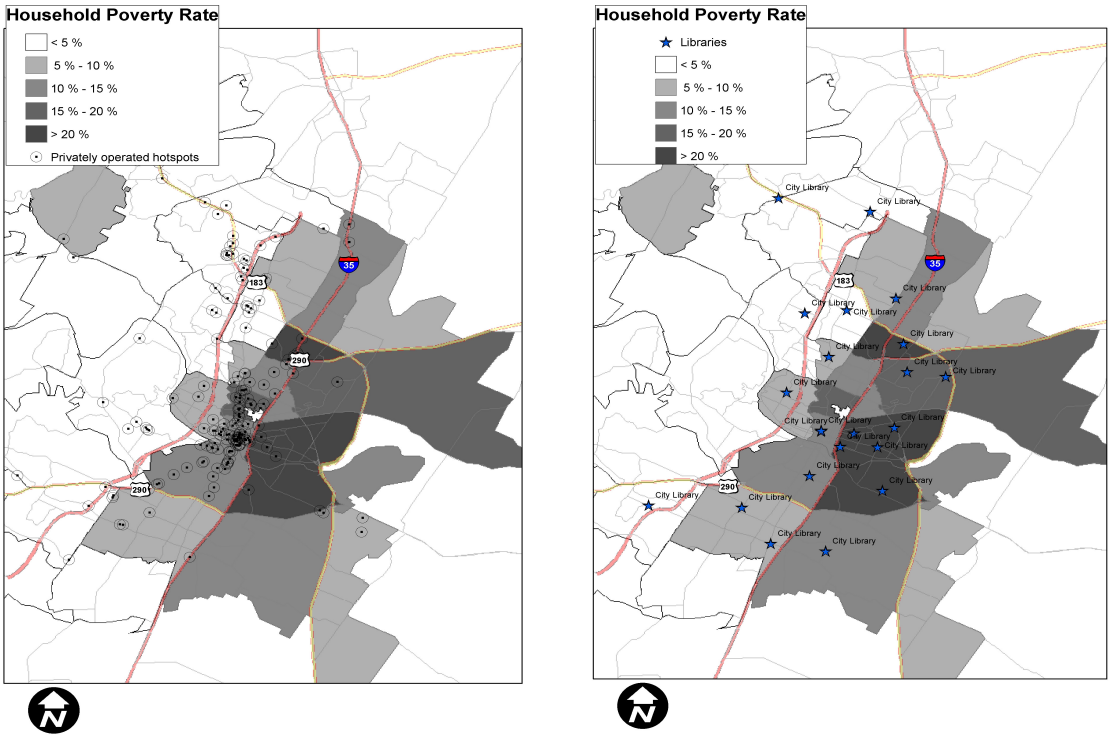


Source: Inagaki (2006)

Mapping hotspots against a poverty map of Austin helps to clarify how the commercial bias of Wi-Fi deployments correlates with geographic patterns of wealth

distribution in the City. Figure 10 compares the deployment of privately operated hotspots to the networks set up by City libraries. By privately operated hotspots I mean, networks that are not managed by the City or by public libraries. Private operators included broadband providers, commercial WISPs, independent venues, and non-profit groups (Austin Wireless City Project (AWCP) and Austin Free-Net). These private providers combined were responsible for the establishment of about 85 percent of the hotspots in the city. The difference between public library operations and private deployments is clear. Nested in the downtown area and spreading toward the northwest and south west of the city, private operators have mostly ignored the east side.

Figure 10.- Privately operated hotspots versus city library hotspots in Austin (2004)



According to the AWCP, the patterns of deployment were a natural outcome of the dynamics of the broadband market. Focusing efforts only on commercial venues in

more affluent areas of the city, AWCP argued that the cost of the broadband service was too high for small businesses in the East, thus they could not sponsor Wi-Fi services as other businesses could in the west. An AWCP informant assured me that a group of students from the UT LBJ School who volunteered in the organization tried to encourage owners of some of the most prosperous eateries in the East side to offer the Wi-Fi services, but their attempts were unsuccessful.[190] Neither did AWCP contemplate working with non-profits to extend public Wi-Fi to the east of I-35. Arguing that non-profits are mostly a "job for Free-Net," the user group highlighted that they were partnering with libraries and the City to provide Wi-Fi services in city facilities, libraries and public parks.

The opinion of the volunteer group was echoed by local WISPs. The cost of broadband services was cited as the main factor discouraging the adoption of the service. When asked why WISPs have not ventured into the market of apartment buildings and single house dwelling in the east side as they have done in the west of the city, an informant suggested that the margins on installing wireless networks east of the interstate highway were not profitable. "Ask Road Runner why they don't make low-cost Internet access in the east side; they are the one who have the infrastructure… It's a matter of just demographics," [191] commented the executive of a successful local WISP.

For Austin Free-Net neither AWCP nor commercial WISPs were really targeting business owners of the east side. "Businesses in the East side need more information; many believe that the technology is expensive because they only see people with laptops using it in expensive places in the west."[192] Free-Net felt that promoting Wi-Fi in commercial venues in the East side was not its job but the responsibility of AWCP.

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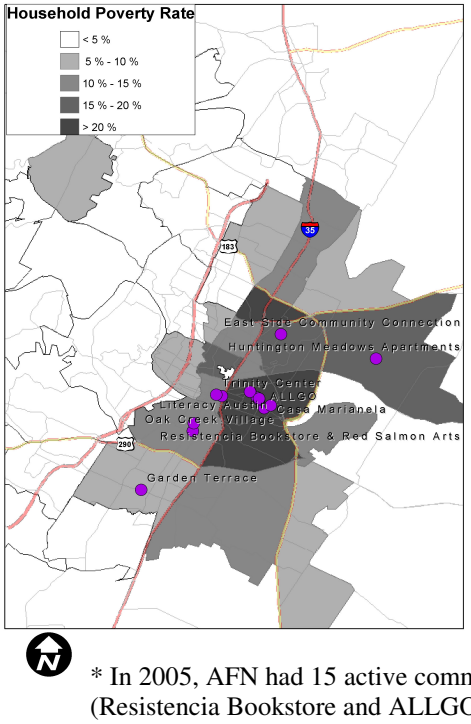
[190] Interview with AWCP representative, May 25, 2004.
[191] Interview with Wi-Fi Texas Executive, August 31, 2004.
[192] Interview with Austin Free-net manager, August 11, 2004.

Facing severe financial and operational difficulties, AFN was cautious about Wi-Fi projects, and decided that it will not deploy the new platform or develop programs to test it at their community sites, which are in effect concentrated in the poorer zip codes of the city (See Figure 11). Concluding that the City and public libraries were better poised to test and provide public Wi-Fi services, an AFN manager explained the organization's view in the following terms:

> "Libraries have excellent tech staff and resources and they are the unseen hero of the digital divide movement. The State has dismantled the TIF [Texas Infrastructure Fund] and the digital divide problem is dropping off the minds of people but the learning curve is still steep… if wireless helps make resources available, we probably ought to do that in the east side…"[193]

Figure 11.- Austin Free-Net's community sites* (2005)



* In 2005, AFN had 15 active community sites. Only two of them (Resistencia Bookstore and ALLGO) were wireless enabled.

From the City's perspective, wireless networks held the promise of supporting a number of public access applications, from extended access to library and government

[193] Interview with Austin Free-net manager, August 11, 2004.

information to telemedicine, and public safety. However, these services could be provided only in city owned-facilities to avoid "overlap" with the private sector. According to a city officer, the issue was clarified over meetings held with the wireless business association, Austin Wireless Alliance:

> "… One of the issues is that in the state of Texas, the municipal government is not allowed to compete with private telecommunication carriers. We talked to the Austin Wireless Alliance, which is mainly wireless companies, and there was some concern that we'll provide Wi-Fi by blanketing an area such as downtown. The legislation prevents us from blanketing service all over the city. We aren't allowed to create a wireless zone, that's the main reason we stopped at libraries, parks and city buildings.[194]

This perspective was modified after the City agreed on setting up a wireless cloud that would serve as a platform for open broadband access, and as an industry test bed for wireless industries. In April 2006, after the completion of the field work for this study, the City of Austin deployed a wireless cloud in the downtown area as a demonstration project for the World Congress of Information Technology. The Mayor announced that the project would remain permanently as a "big gift" of the WCIT and Cisco Systems, which donated equipment valued at $700,000. As explained by Peter Collins, Chief Information Officer, City of Austin, "the wireless mesh is a critical component of our [the City's] economic development strategy. It makes the city more attractive as a place for business and provides a test bed for companies developing new wireless technologies."[195]

The justification for this public-private partnership in developing public advanced communication infrastructure is mostly based on the City's concerns for improving its operations, and industry's interest in research and development projects. According to a press release by Cisco systems, besides Internet access, the wireless mesh network will enhance "public safety" and "productivity" of City staff that will be able save time by

[194] Interview with manager of the City of Austin, Communication technology office, August 6, 2004.
[195] Cysco System, press release. Austin's Wireless Mesh Provides Free Access and Test Environment. http://www.cisco.com/en/US/products/ps6548/products_case_study0900aecd80563c29.shtml

checking messages, accessing applications and files on their desktop PCs, and filing reports away from their offices. Public safety applications include emergency calls and communications to police, fire, ambulance services, or the Red Cross. From the industry perspective, the mesh network will allow "technology companies to do their testing in a mix of wireless settings – residential, downtown, and recreational," developing wireless voice over Internet (VoIP) products, protocols, and a variety of wireless applications.[196] But the wireless cloud will not blanket the whole city. As Figure 12, shows, the cloud as it is currently envisaged is planned to extend only to areas contiguous to City Hall and the Austin Convention Center, and to neighborhoods to the east of I-35, between East 1st and East 12th streets.

Figure 12. City of Austin Mesh Wireless Network * (2007)

Source: City of Austin

* Pilot installation of the City of Austin's wireless mesh network. The shaded areas represent the wireless coverage for the current deployment

The announcement of the extension of the City's wireless cloud towards the east, however welcome, also poses important questions for access group and city officers.

[196] Ibid.

First, building public infrastructure that supports open access to high-speed Internet services is an important step towards enhancing access opportunities in historically deprived areas. However, a model of access narrowly focused on the availability of service and connectivity is unlikely to deliver the benefits offered by the technology. How will local government and communities meet this challenge? Access organizations that could provide more training and develop social and community applications of the technology are struggling to carry out their mission in a landscape characterized by fragmentation of efforts, and diminished funding opportunities.

Second, the deployment of the City's mesh wireless network is taking place in the context of urban redevelopment initiatives in the east side which local communities have denounced as the gentrification of their neighborhoods.[197] Saltillo Plaza, the first wireless public park in the East, has become the center of disputes between the City and neighborhood groups.[198] Sitting on newly revalued lands at the east of downtown, the Saltillo development plan seeks to transform the area into a bustling hub of shops, offices and lofts for Austin's young professionals. Community leaders insist that the plan along with the increased property taxes it almost certainly promises in the area will drive long-time residents away from their homes.[199]

Operating under a market-driven regulatory framework, municipal action to extend access to new technologies is now confined to areas not served by commercial providers, and only justified by economic development imperatives, in line with local business interests. Citizens' access rights to new media appear to have become

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[197] Schwartz, J. (January 30, 2005) East Austin's changing landscape. *Austin American-Statesman*, News, A1.
[198]Schwartz, J. (June 21, 2004) Plaza Saltillo challenging planners; Some fear gentrification. *Austin American-Statesman*, B1.
[199] Ibid.

conditional on the transformation of public access networks into live labs for technology industries.

4. CONCLUSIONS

This chapter has discussed the process of configuration of public access through the unlicensed spectrum in Austin, focusing on the social choices and the rationale behind the action of different stakeholders who mobilized between 2003 and 2005 to set up Wi-Fi networks and services in diverse public spaces of the city. The rapid growth of public Wi-Fi can be explained by the presence of a critical mass of early adopters who were among the first stakeholders in organizing to provide the service. They formed new non-profit organizations such as the Austin Wireless City Project (AWCP) with the main goal of promoting open access to broadband services in public spaces of the city. Other providers included the city, cable and telephone companies, local wireless ISPs, and the community network group, Austin Free-Net (AFN). Through their collaboration and competition they shaped an emerging market of public wireless connectivity. Cooperative action between user groups and WISPs was driven at one level by the self-serving interests of users, who wanted to have the service available everywhere, and at another level, by business interests of commercial providers, seeking to enhance their share in the emerging marketplace of wireless broadband services. In the Austin case, community initiatives meshed with business interest in several ways. First, in developing their work, both AWCP and WISP targeted commercial venues, convincing managers and owners of these places to "sponsor" Wi-Fi services, opening their networks to attract more customers, mostly entrepreneurs and business professionals, techies, students, and academics, among other members of the creative class. Second, AWCP's actions to extend broadband access targeting commercial venues meshed well with the City's interest in supporting private initiative and economic development efforts. Third,

cooperation through strategic visioning, volunteerism and technical support enabled the AWCP to funnel resources and expertise from industry organizations, technologists, and the City to promote their services through a business model that features open access as its main attraction. The work of "support groups" such as educational institutions, business associations and hobby groups facilitated these exchanges. Finally, in paying for broadband connectivity costs, commercial venues expected to recoup the cost of their investment by attracting a larger base of customers to their venues. This business practice required that broadband providers modified their user contracts for business customers. The model of public access fostered by these dynamics has been focused on enabling connectivity, ignoring restrictions on potential users resulting from lack of skills, and the cost of the equipment necessary to access these networks. The new notion of community access in these spaces has been further fragmented and personalized through the individual use of mobile, personal devices.

Under this commercially-driven rationale, community technology groups and municipal initiatives have encountered difficulties in articulating an alternative vision that would enhance the social applications of the technology for the general public, and for those who lack the skills, means and tools to go online. Lacking resources to test the technology and develop new programs that use it, AFN decided not to deploy Wi-Fi in its community access sites. In order to avoid possible confrontations with state authorities and private business, the City decided to partner with the non-profit AWCP, WISPs and wireless networking companies to extend open wireless broadband services.

Austin is unique as 75 percent of its hotspots are open to the people who congregate at these venues, arguably building a wide spectrum commons for the city. However, overview maps of the socio-geographic patterns of hotspot deployment shows that most of the new possibilities for high-speed access are concentrated in commercial

and more affluent areas of town. The case of wireless networks at public libraries stands in contrast to private deployment, as an example of the benefits of a universal service model that provides services for all areas of the city. More recently, the City has recrafted their original conception of public access to support public information and government applications. This new orientation of the local policy, as represented by the City's mesh wireless network, emphasizes notions of public access as an initiative of economic development and industry test bed, targeting underserved and poorer areas of town for these experiments.

Chapter 7: Conclusions

This dissertation analyzed evolving notions of public Internet access in public policy and providers' understandings of their practice through a conceptual model that integrates symbolic constructions and material practices of institutions and social agents that support people's access to new media. In the symbolic sphere, this project presented a historical overview of how policy discourses at the federal, state and local level have framed or conceptualized people's access to communication and information systems in the transition to deregulated, convergent media scenarios. In the material plane, this research explored notions of public ICT access held by provider organizations in Austin, Texas, focusing on how they justify their praxis and make decisions on services provided, their conceptualizations of the public and the social applications of the technology. Theoretically, this discussion is guided by the notions of fields (Bourdieu, 1993, 2005), institutional dispositions and access cultures.

On the whole, analysis of policy discourses on public Internet access revealed the growing preponderance of market and industry priorities and goals as the main rationales behind state action to support policy and programs that promote people's access to new media. At the same time, the state has progressively receded from roles as grantor and provider of public access services through public institutions while expanding administrative functions as promoter of commercial services and free markets. Frames that emphasized freedom of information and citizens' participation in the electronic democracy employed in the mid-1990s have been abandoned in recent years in favor of frames that highlight government efficiency, and market and industry goals. There has been also a shift in the conceptualization of the role of the state as promoter of telecom and new media markets. Market objectives previously pursued through diffusion of

innovation and workforce development efforts targeting specific publics have been recently recrafted as the creation of markets for commercial broadband providers and manufacturers of wireless networking systems and devices. Nonetheless, the preponderance of these ideas at the federal and state level has not entirely eradicated local, Austin-specific conceptions of public ICT access as a tool for community building and continuing education. The case study of Austin reveals that such alternative frames are mostly active through diverse municipal programs that continue encouraging citizens and non-profit action in the field of public Internet access. Such competing frames are a source of tension between municipal initiatives at one level, and state and federal policy at another level.

One of the best examples of this dissonance explored in this dissertation was the case of the City of Austin enacting a permanent community technology initiative in 2001 – the Grant for Technology Opportunities Program (GTOPs) – that features the expansion of public ICT access as a main goal, just before the Federal government and the state of Texas closed funding opportunities for such projects. The local government has sorted out possible conflicts with state and federal powers by incorporating industry and market frames into their repertoire of policy choices on public access, supplementing earlier, more digital-inclusion-oriented frames that they still maintain. The result is the fragmentation of policy discourses on access to new media with a marked inability to draw connections among the diversity of public access programs.

How have these changes impacted local access initiatives? I employed the concept of field (Bourdieu, 1986; DiMaggio, 1991) as an analytical tool to trace the continuities and transformations of public access organizations in a shifting regulatory environment. I found evidence of the existence of a field of public Internet access composed of organizations that recognize their practice as providers of opportunities,

skills, and expertise in new media. However, this research also identified trends toward the fragmentation of the field of access to new media, in an environment characterized by struggles among different access organizations for funding, recognition and grassroots support. Segmentation rather than convergence characterize the relationship among access groups. City support and encouragement of access programs correlate to the diversity of access initiatives that from the 1970s have populated Austin's mediasphere. My research did not assume a direct connection between policy discourses and praxis of access organizations. However, drawing on Bourdieu (1984, 2005) and DiMaggio (1991), this project did assume that policy discourses frame perceptions and actions and create conditions for the emergence of certain trends in the field of public access to new media, traced over time. Additionally, it did assume that policy discourses reflect hegemonic forces that through the state act as organizers of the field. On the one hand, the analysis of patterns of development of public access to new technologies in Austin found indications of frame alignment in the emergence of access organizations holding notions of access close to preponderant policy frames of the moment. This dynamic explains the emergence of groups led by librarians and technologists, such as MAIN and Austin Free-Net, as main providers of public computer access, taking precedence over cable access groups that first provided public access to electronic media in Austin. On the other hand, dissonance between prominent federal, state and local policy discourses and those displayed by particular access groups resulted in the instability of the access model they support. For instance, the cross-sectional analysis of how different access organizations have adopted wireless broadband technologies revealed a marked inability of traditional community technology access organizations such as Austin Free-Net to devise social applications of the technology beyond market-oriented and commercial solutions to connectivity suggested by federal level policy. Both examples underscored how the

power of local groups interacts with the municipal government in shaping the field of public access at the local level. The institutional analysis of access organizations also suggested that distinct access cultures as expressed in particular institutional dispositions at multiple, intersecting levels and symbolic practices explain the resilience of established institutional forms of access in a changing technological and regulatory environment, and their resistance to experiment with convergent media platforms.

I now discuss the significance of these findings and their implications for the social theory of technology and policymaking. The following section briefly summarizes the project's main questions and findings, elaborating on how they relate to the main propositions that guided the research. The chapter then offers a reflection on possible approaches to rethink public access policies for convergent media scenarios. Finally, directions for future research are suggested at the conclusion of this chapter.

1. SUMMARY OF FINDINGS

This dissertation sought to answer the following three questions: First, how has public access to ICT been framed by public policy facilitating the transition toward convergent media environments? Second, what are the main characteristics of the field of public access to ICT in Austin, Texas, an American technopolis? Third, how have different "access cultures" reconfigured public access to new technology through the unlicensed spectrum, under a market-driven regulatory environment? In answering these three research questions, this project identified connections between policy discourses and institutional forms they enable. Social interactions among access organizations was also a focus of the research, capturing how technological choices and notions of public access are culturally and historically "embedded" in symbolic and material practices of institutions and key agents in the field (Granovetter, 1985; Warschauer, 2003).

1.1. Policy discourses on public access to new media

The historical overview of the literature revealed that the notion of public access is indeed a relatively recent concept in communication policy and law in the United States. Although arbitration over different parties' rights of access to communication and information systems can be traced back to public interest regulation of the telegraph and telephone law of the 1890s and the 1920s, the concept of public access first appeared linked to rules issued in the late 1960s and early 1970s in support of public access to information, and direct participation of the public in the cable system. Under common-carriage and universal service principles that have historically governed telecommunication systems, access rights were recognized as the rights of vendors to enter the market, and the rights of individual consumers to subscribe to telecom services on an affordable and non-discriminatory basis. Under this tradition, access rules were regarded as enablers of free, competitive markets, rendering definitions of users as consumers and active agents in the market. The trusteeship access regulatory model that has ruled the broadcasting system opened some spaces to public voices in the media by granting access to rival political candidates to express their views. Although for a period regulators enforced rules that enable local and third parties voices to be heard on broadcasting systems, access rights as a function of speech rights have come to be defined as a function of individual property rights of licensees or owners of these systems.

The concept of public access was first made law as a principle associated with access to public information and the people's right to know with the passage of the Freedom of Information Act (FOIA) in 1966. FOIA gave shape to the first public access regime formally designating the public library system as the link between government and citizens to act as depositaries and local distributors of public information. Although

libraries across the nation had played parts of this role since U.S. independence, FOIA strengthened the institutional protection of this practice by emphasizing the library's functions as open systems for the distribution of information. Under this framework public access was implicitly conceptualized as availability of public information for public consultation. Mobilization and judiciary activism of journalists and the media from the 1960s onward has been particularly influential in shaping the notion of public's access rights associated with ideals of informed democracy, transparency, and accountability. Courts have interpreted media access rights to public records as limited to those established by law to all citizens, thus access rights of the press and the public have tended to be regarded as the same.

Another conceptualization of public access to the media came about as part of regulators' attempts to shape new media markets, favoring the creation of public, educational and government (PEG) channels on cable systems. PEG channels were the result of the coupling of federal and local regulation on cable providers. Concerned with protecting the prerogatives of the broadcasting licensees from the perceived threat of cable competition, the FCC issued rules banning cable in the top 100 markets, while requiring cable companies to carry local broadcasting signals and originate local programming. At a local level, municipalities became involved as administrators of the public right-of-way, requiring cablecasters to pay a percentage of their revenues and maintain certain service standards in exchange for allowing the franchise to operate de facto local monopoly markets. Infused by the spirit of civic activism of the civil rights era, citizens mobilized, demanding direct participation in the cable system. PEG channels emerged from these intersections between industry and local community agendas, embodying ideals of free speech, localism and diversity of public voices. Cable law in the 1980s and 1990s transformed public access into a prerogative of localities to negotiate

PEG access provisions through their cable franchise agreements. Under this vision, public access television in the United States has grown unevenly, becoming increasingly dependent on the political clout of local franchising authorities, and on the vitality of local groups of independent producers and advocates of access.

These two public access regimes have not transitioned equally well into regulation dealing with convergent media services, and underwent significant transformations during the 1990s with the spread of market-driven regulation. Access to public information and freedom of information became the predominant frame of policy and law supporting public access to electronic media environments through policy initiatives and structural regulation that largely justified federal action to sponsor public Internet access at public libraries. The Clinton-Gore National Information Infrastructure Initiative of 1993 played a crucial role framing Internet access at public libraries as the main hub enabling citizens' access to electronic government. This notion was codified into law with the passage of the Electronic Freedom of Information Act of 1996.

A third notion of public access was shaped under the 1996 Telecom Act, a statute mostly concerned with economic efficiencies, competitive markets and innovation which furthered universal service goals through the promotion of Internet access to public institutions such as schools, libraries and rural healthcare facilities. Inspired by universal service principles, this conceptualization of public access to new media now operates under a market rationale which seeks to enable telecom markets to allow more citizen participation in telecommunication markets through widespread adoption of high-speed services at designated institutions. In fact, the concept of "public access" does not exist as a principle of telecommunication regulation. Internet access at public institutions sought to enhance the functions of these organizations, while promoting equitable access and the adoption of ICT. The Act allocated resources of the universal service fund to subsidize

connectivity to schools and libraries. Under this technological-push approach, and protected by federal law, Internet access at public institutions became a surrogate for public access to new media, mostly operating under diffusionist and market-led frames. Implicitly assuming that free markets would not easily find incentives to deliver Internet services to less profitable segments of the market, and to attend the demands of the non-profit segments of the economy, the diffussionist approach to access policies followed the dynamics of marketization, creating incentive and promoting partnership between public and private institutions to extend connectivity that support activities such as education and job training programs, health services, and delivery of public information.

Framing analysis of policy programs that promoted these initiatives revealed some key trends. First, operating under the framework of digital divide policies, public Internet access was mostly regarded as individual connectivity to advanced telecom infrastructure in designated public institutions, and as a substitute to home access for the "information have-nots." Second, acting as community "safety nets," networked public institutions would play an important role as demonstration sites of new technologies, promoting government information, educational and life-long learning uses, workforce development, and support for healthcare applications. Third, collaboration with local and community non-profit organizations was regarded as a mechanism to extend the diffusion of the technology, priming educational, workforce and economic development goals. Finally, the increase of Internet penetration and individual-based connectivity through a multiplicity of places (home, work, school, and community center) and platforms (i.e. wired and wireless devices) ended the rationale for federal programs that supported community Internet projects. Assistance for broadband connectivity to schools and libraries through the e-rate program stands as the only vestige remaining from the universal service mandate as conceived by the 1996 Telecom Act.

Since the passage of the 1996 Telecom Act, frames of public Internet access policies have evolved following the progression of increasingly market-led regulation. The evolution of market frames can be observed in changes in the conceptualization of the roles of the state, non-profit action and markets as facilitators of public access to new media. In recent years, a reinterpretation of universal access mandates as applied to broadband services through the unlicensed spectrum has fostered a new notion of public access enabled in commercial spaces. Federal initiatives after 2000 have reframed public Internet access as an enabler of commercial services and critical government missions such as homeland security, public safety and scientific research. Ignoring the role of public institutions and non-profit actors as forces behind the diffusion of the technology, in 2003 the NTIA invited commercial efforts to deliver broadband services to consumers at hotspots in establishments such as restaurants, hotels and airports. Coupling spectrum reform with broadband policy goals, these initiatives were aimed at creating new markets for wireless manufacturer and broadband providers, under a process that can be characterized as the commoditization and individualization of Internet access at public spaces. Since 2000, federal public access policies have reified market solutions as the only vehicles capable of delivering advanced telecom services, tacitly accepting market failures as an unavoidable outcome in the standard development of new media markets.

Through analysis of the State of Texas and the City of Austin policies on access to advanced telecommunication systems, this dissertation identified several continuities and disjunctions between federal, state and local public access policies. A pioneer of telecom deregulation in 1995, the state of Texas furthered the marketization of access rules by creating funding programs for connectivity at public institutions (libraries, schools, higher education institutions and rural healthcare providers) as financial incentives to industry and firms interested in building advanced telecommunication

infrastructure. Not only was the market regarded as a superior mechanism to build public telecommunication infrastructure but also Texas regulation banned municipal involvement in the provision of these services. Municipal initiatives were regarded as a threat to the operation of competitive markets. The Texas Infrastructure Fund (TIF) was created to act as a catalyst of public access to the NII, encouraging private initiative in the build-out of public infrastructure. The policy model implemented by TIF was a technological push focused on enabling access to hardware and infrastructure, utilizing state investment as an indirect subsidy for vendors and providers of these services.

Besides its investment in library facilities, the TIF funded networking infrastructure that connected local institutions through a community technology program which sought to extend Internet connectivity to the general public. However, library and community technology grants only absorbed 15% of the TIF investment while most of the investment was directed to schools and higher education institutions. Through its grant-making activities, the TIF prioritized educational institutions and those in rural areas, underscoring the assumption that connectivity would be better employed for educational purposes and to bridge urban-rural gaps. With the closure of TIF in 2003, Texas abandoned its commitment to public ICT access. Instead, the state has furthered its market-driven approach to broadband access policies in unparalleled ways. Overruling historical municipal franchises over video providers, in 2005, Texas became the first state to limit local authority over video broadband providers under the promise of expediting the delivery of high-speed services to the home. With the dismantling of local protection of PEG channels, Texas directly equated the public interest to the work of competitive markets.

Despite the hostile state climate to municipal action, policy analysis of the City of Austin's initiatives revealed that the local government has played a pivotal role

supporting public Internet access programs. Interviews with city officers and analysis of policy documents pointed to three main factors explaining the vigorous involvement of the local government in the field of public access: 1) the demands of local stakeholders (e.g. industry and trade organizations; educational institutions, libraries and community groups) for the diffusion of these services; 2) the cable regulatory experience of the previous three decades that primed the role of municipal government as grantor of public access to new technology; and 3) the influence of federal level discourses in the 1990s to expand public access to the NII.

Attending to state restrictions on municipal involvement in provision of telecom services, the City of Austin has fostered and supported non-profit action through organizations such as Austin Free-Net that serve as providers of public Internet services. Under this framework, municipal action is legitimated in so far as it responds to a community demands or supports local industry efforts to promote economic development through technological diversification. Public-private partnerships through newly created non-profits were employed as a mechanism to leverage resources from stakeholder organizations (i.e. industry, user groups and technology enthusiasts), other institutions (i.e. libraries and schools) and the federal and state governments.

The City of Austin has justified its sponsorship of Internet access programs on a range of grounds. Framing analysis of policy documents corresponding to programs enacted between 1995 and 2005 indicated a progression of frames at the local levels that departed from access to information and connectivity to the web, and economic and community development goals. Access to local government services and public information was the main justification behind the adoption and promotion of public Internet access at city libraries from 1995 onward. Public access was understood as open access to computer resources and the web, enabling connection to online City services.

Drawing on digital divide rhetoric, beginning in 1998 the City promoted public access as an economic development initiative through workforce development programs that use technology to promote "school-to-work" opportunities for students and parents among low-income families. Public access as promoter of community sustainability emerged as a much later frame in 2001, through the creation of the City's Grant for Technology Opportunity programs (GTOPs). Following the experience of other technology-driven local economies in the country, the City conceived GTOPs to increase connectivity and training in technology programs that encourage neighborhood planning and civic participation. In recent years, the city has embarked on new partnerships with non-profits and private companies to enable free, public access to wireless broadband services in city owned facilities, libraries, and parks. The City has extended public wireless infrastructure in the downtown area and areas not served by private providers. Reproducing the rhetoric of federal level policy, the City has justified these actions by asserting that the public wireless network will serve as an industry test bed for local companies that compete in the national and international market for wireless products.

Through the diversity of policy programs implemented and sustained in the last decade, the local government has positioned itself as the main promoter of public ICT access initiatives in Austin. Justifying its actions through a diversity of frames, the City seems to add breadth and depth to the definition of public access to new technology. However, a lack of coordinated action and an inability to leverage efforts and resources among different programs has led to the fragmentation of local policy on access. Such fragmentation is evident in the allocation of administrative responsibilities of these programs to diverse City dependencies.

To summarize, in the last decade regulation that once justified wide support of public Internet initiatives has succumbed to new policies reflecting market imperatives in

telecommunication policy and law. Policy that promotes public ICT access is rather fragmented. Since technological applications generate numerous externalities cutting across many spheres of public life (i.e. education, economic opportunities, social welfare), public policy has tended to break up policy efforts to target numerous issues. The focus on public institutions specialized in education, access to information and health represent an effort to meet specific social goals while meeting market goals through widespread diffusion of new technologies. However, ignoring the role of cable and technology access organizations, federal and state regulation and programs did not contribute to building expertise and resources of organizations specialized in access and community network issues.

Sector specialization is required to build capacity and leverage resources to coordinate literacy and skills in new technologies. Federal and state programs tended to prioritize investment in advanced infrastructure and connectivity, rather than in skills and organizing capacities needed to reap the full potential of the technology. In contrast to policy during the cable era which established protection of PEG channels through structural regulation, public access policy in the convergence era has proceeded through short-term funding programs that leave access organizations in very vulnerable positions. Such vulnerability has become more evident as federal programs were shut down following a change in the political winds of the federal and state administrations after 2000.

1.2. Evolution of the field of public access to new media

I proposed employing the concept of field as a theoretical tool to explore the impacts of shifting policy discourses on public access to new media on the practice of organizations specialized in facilitating people's engagement with new media. This proposition demanded the development of a historical and relational view that

investigated the process by which access organizations were formed. Through the Austin case study, I traced back the roots of the emergence of the field of public access to new technology to the work of cable access groups that in the 1970s set out to enable citizen participation in cable systems, and to failed attempts of Austin Community Television (ACTV) to move into computer and Internet access in the early 1990s. As one of the founders of public access television in Austin pointed out, multi-media technology is an evolving concept that started with portable cameras and video distribution and has been extended to the computer. Public access channels, free-nets, libraries and most recently community wireless groups identify their practice as facilitating people's use of new technology, and some of the informants of this study specifically recognized their various practices as a field and overall endeavor to empower communities and the public in various ways.

However, the field and practice of public access has taken on different meanings through the work developed by different organizations around new technologies. This is better observed in the role of access organizations as cultural intermediaries of new media consumption and production, operating under distinct socio-cultural dynamics that I have chosen to call "access cultures." Access cultures, as the assemblage of material supports, social practices and symbolic and cognitive processes constitutive of ICT access organizations, frame common understandings of the technology, and contribute to the definition of the field.

The field of access emerged in the intersection between public interest policy and organized action of local groups to extend access to media technologies to the public. Federal and local policy created normative and structural conditions for organized action to materialize in distinct access organizations at the local level. Austin Free-Net was not just the expression of organized citizens who claimed access rights to new media. Rather,

AFN was born under local government sponsorship and direction to serve as a grassroots counterpart of municipal initiatives, and responded to the federal government call in the 1990s for the universalization of access to the National Information Infrastructure. At the same time, agents and groups interacted with the local powers in outsider and insider positions within the municipal government, advocating for affirmative access policies. This multiple positioning of agents in the field is one of the distinct features I found in the Austin case. Government officials are far from being pure technocrats. Their visions are informed by their aspirations and experiences as citizens with affiliation or connections to peace organizations and other community groups, technology groups, and business and entrepreneurial circles in the city. The field of access to ICT is shaped by these multiple connections under the particular social dynamics of localities.

The emergence and formation of access organizations greatly depends on the alignment of policy frames with the frames employed by different social groups in their quest to increase their recognition and resources to advance particular agendas through public access. In other words, the emergence and consolidation of an access model is contingent on the symbolic power and discursive strategies deployed by agents in relation to the symbolic power of the state. For instance, at the national level, the downfall of the free-net model based on the provision of Internet connectivity can be understood in the context of policy discourses that emphasized the role of the grassroots as a non-profit venture dedicated to education and job training activities. Policy became clear; community-based networks do not compete with commercial ISPs.

In Austin, the local government's concerns for promoting universal access to new technologies were not simply altruistic. The municipal government had vested interests in creating an environment that supported the growth of technology industries by meeting their demands for skilled workers. As discussed in Chapter 5, the predominant system of

social governance in the city responds to economic and social arrangements that encourage technological diversification. When the City of Austin had to decide how to direct its support for ICT access programs, technologists and web professionals were well poised to reap recognition and symbolic power from Austin's local powers. As direct stakeholders in technology businesses, technology professionals drew on their social, economic, cultural and technological capital to back Austin Free-Net. In contrast to members of the sub-field of cable access television whose main technological competences were associated with the practice of video production, technologists and members of community networks had an already developed sense of technological practice around computers and the Internet. The result was the displacement of cable access groups as possible providers of public ICT access. As suggested by Bourdieu, any social field is, above all, a field of struggle in which agents compete for recognition and resources.

As this account indicates, symbolic power does not lie in the symbolic system itself, that is, on how regulation and policy conceptualize people's prerogatives to access new media. Symbolic power is able to construct reality through the social relationships between different agents or institutions that exercise power and those who are subject to it. In that regard social embeddedness (Granovetter, 1987) of access organizations and agents that participate in them was identified as a significant factor shaping particular notions of public access and access programs. For instance, although AFN's main mandate was to wire city libraries, executives of the organization with previous trajectories as members of peace and gay and lesbian organizations brought a social justice frame to the organization which was reflected at the time in a unique organizational structure that set out to connect through online content and infrastructure diverse community sites through the East Austin Community Network (EACN). The

EACN was in reality a combination of the standard community technology center and the free-net model, which claimed to build technological networks "on top of social networks." Although EACN confronted a number of implementation and sustainability issues, it did extend access deeper into low-income communities. MAIN offered another example of how embeddedness of access organizations shapes access programs. With a leadership mostly composed of librarians and heads of ISPs, MAIN developed a social entrepreneurial approach to access, targeting non-profits, municipalities and communities with no previous experience in developing accessible local content. In the words of MAIN's executive director, the organization offered their services to "the commercially unloved" organizations that worked with special populations. In this model, Austin served as a test bed and showcase for MAIN's services, extending online access for communities around the state.

Another important factor in shaping access models is how access groups define their role as cultural intermediaries of new technologies. Among members of the techno-class, freedom of information was part of the core civil libertarian principles that distinguished them as technologist and creative professionals. This mark of distinction was shared by librarians affiliated to MAIN who as experts in information management systems saw in the formation of online communities a way to democratize access to information. Operating under the same access to information frame, librarians, technologists and local government came together to bring public internet access to Austin public libraries. However, controversies about the use of filtering at the library set them apart. Embracing communitarian values, librarians and city officials sided with proponents of minimum filtering practices while 'techies' rejected these practices as an attempt to undercut electronic freedom of information.

Meanwhile, cable access groups that upheld principles of free speech and expression, found little identification with the normative and practical articulations of the technology that linked information retrieval functions with educational and economic development goals. Although computer networking technologies and not cable were the first to deliver on the old promise of interactivity, the culture of public access television developed under the alluring power of the moving image, ignoring for the most part the computer which in the early 1990s was primarily perceived as a text-based medium. As suggested by DiMaggio, the development of a sense of professional practice, coupled with notions of professional ethics, is an important factor shaping the contours of fields. I argued that both notions are manifestations of institutional dispositions and individual habitus of public access practitioners.

Institutional dispositions and different visions held by providers about the social role of access organizations have significant implications for the services that are made available to the public. Consider the example of the configuration of the "immigrant terminals" in Austin public libraries. These terminals were set up in seven library branches in neighborhoods with high concentrations of immigrant populations. The computers are the only stations with interfaces other than English; however, librarians advise patrons not to use them to go online and surf the web. Although the terminals are connected to the web, their interface is configured as a closed environment that provides links to the immigration and naturalization services, U.S-based news services in different languages and software to master English language proficiency. Under the institutional logic of the library oriented toward delivery of public information, ICT access targeting immigrant groups is conceptualized as a tool for assimilation and cultural adaptation to an imagined American mainstream.

The field of access has grown at the edges meshing with other social fields through connections, partnerships and arrangements with social institutions such as homeless and immigrant shelters, churches, senior centers, low-income housing facilities and job and training programs. Facing financial and operational constraints as a result of the closure of major federal and state programs for ICT access, organizations like Austin Free-Net that are not able to meet the demands for expansion and upgrade of their services have employed these partnerships as a mechanism to build sustainability of their programs. In this context, a new notion of access has emerged. The "basic need" approach to access builds on a social service mentality that provides connectivity and basic computer skills to people who apply to social services benefits. The relation with the public is thought of as similar to the one that operates between social workers and their "clients," one of assistance in which users are "recipients" of basic services and guidance delivered through a top-down dynamic. The public is regarded as the poor, uneducated, and with no computer literacy skills. In limiting public ICT access to basic digital skills, access organizations have renounced their role as innovators. Drawing on the old digital divide framework, Free-Net narrowly focuses its programs on "the underserved." But in not offering other paths for development beyond basic computer skills, rather than alleviate, they actually reinforce the social stratification of access. Arguably, this practice could result in the further "ghettoization" of public access sites by the seclusion of those with basic digital skills in training centers that are not used by those with more advanced skills and members of the creative class. Such notions and practices contribute to craft constructions of the technology, the use of certain appliances and services as a mark of distinction separating creative workers from the rest of Austin's citizens.

The emergence of the basic need approach to access also provoked a rupture in the field of ICT access in Austin. AFN's focus on the underprivileged and those with no computer skills drove away many technology professionals and proponents of the idea of using public access as demonstration sites to showcase the most recent technological innovations. Technologists who abandoned the leadership of AFN tended to gravitated to new techie-oriented access groups such as wireless users and the community wireless non-profit that appeared in Austin's landscape in 2003. As they did in 1995 when Austin Free-Net was formed, drawing on their social, technological, and economic capital, technologists brought strong support to wireless initiatives in the city, leading to a fracture in the field and the formation of the sub-field of public wireless broadband access.

1.3. Configuration of public access in the era of wireless broadband

The social stratification of access is also advancing through the configuration of public ICT access services for the creative class. Examining the adoption and configuration of public wireless broadband networks in the City of Austin, this study found evidence of two contradictory trends fostered under market-led policies to extend access to high-speed networks: 1) on the one hand, open access through the unlicensed spectrum has invited a multiplicity of initiatives that promote the rapid diffusion of Wi-Fi services free to the end-user offered under the sponsorship of different venues and public spaces in the city; 2) on the other hand, the diffusion of the technology has been clustered in commercial spaces and more affluent areas of the city. In other words, Wi-Fi deployments correlate with geographic patterns of wealth distribution in the City. The results are even more intriguing when one considers that most of this growth has been driven by the work of users groups and a newly created, non-profit organization – Austin

Wireless City Project – that was in fact the largest single provider of Wi-Fi hotspots in Austin by the end of 2004.

These results challenge the vision of the commons through the unlicensed spectrum as an automatic solution to problems of access and digital gaps. Benkler and other proponents of the spectrum commons have seen in Wi-Fi and other wireless standards that operate in the unlicensed spectrum "the greatest promise to deliver a common physical infrastructure of first and last resort" owned and controlled "by its users" (2006, p.402). Results of this study suggest that under the commercial rationale that governs the development of the spectrum commons, access to high-speed services are primarily configured for the technologically skilled, and those with means to access these services.

Several factors were identified as shapers of these trends. Users groups and non-profit action in the deployment of hotspots have focused on extending infrastructure to venues and customers of these venues, not to the general public. Therefore, from the non-profit perspective, access is reduced to availability of connectivity at coffee shops, restaurants and dinners, bars, and other locations. User groups have shaped the market by positioning themselves as intermediaries of broadband services between venues and major broadband suppliers (telecom and cable companies), assuming the perspective of another commercial wireless ISP (WISP). Drawing on its growing intermediary role in the market of commercial hotspots, non-profit action has been crucial in instituting the practice of broadband sharing, and convincing established broadband providers to reformulate their user contracts to allow commercial customers to open their broadband networks to the public with no further charge. Local commercial WISPs have emulated and supported the work of the non-profit as a mechanism to increase their market share and opportunities to sell technical support and web content assistance to commercial

venues. From the perspective of venues' owners and managers, the main reason to adopt the service and make it available to the public is the commercial drive to attract customers, primarily those in upper demographics. Wi-Fi services are regarded as a basic amenity just like the "air conditioning system," as the owner of a WISP explained. The result is an entrepreneurship model of access that reduces access broadband connectivity, and is based on the individual's ability to make use of the resource, while paying for it in other ways.

This study identified the commercial framework driving this access model, and the construction of wireless technology and devices as solutions "for the privileged" as factors preventing stakeholders – including Austin Free-Net and the City – from devising social applications of the technology aimed at enhancing access opportunities in lower income areas of the city, or technological solutions beyond those suggested by predominant federal level policy. As previously discussed, there are structural limitations constraining the ability of AFN programs to feature technological innovations. Additionally, AFN has developed a vision of access that focuses on basic computer skills geared to the poor, limiting the opportunities and technological options made available to low-income groups in the city. Finally, perhaps the most important lesson of the case study of public Wi-Fi development in Austin was that the commons demand more than simple coordination of actors to ensure the openness and universal availability of digital systems. A renewed social commitment is needed among stakeholders to address questions of equity and participation. As we have seen, the market has failed to provide answers to these questions.

1.4. Recapitulating: the field of access and access cultures

Drawing on Bourdieu's concept of field, the concept of the field of ICT access proposed by this study provided a comprehensive and relational view to evaluate the

different roles, connections and ruptures between diverse groups that facilitate people's access and use of new media. In particular, the concept of field allowed us to observe continuities among organizations that have grown separately under labels such as community media and community networks, understanding forces that have set them apart and shaped their practices. Thus, the field of public access to new media is defined as a system of social, symbolic and material interactions in which access organizations struggle for the accumulation of symbolic, social and other capitals available for the reproduction of their practice. While convergence of communication systems via digital networks has blurred the boundaries that defined specific fields of video production, library information management, and computing networking activities in the past, access organizations are tending to grow separately, competing for the legitimacy of their practice as mediators between different publics and access resources. But what brought them together and what is setting them apart?

Normative discourses that have recognized people's rights to access media are a primary arena for the identification of a shared vision of the social need for access practices. As suggested by Bourdieu, the state – acting through regulation, policy and law – is a primary organizer of the rules of interaction in the field. While regulation of the cable era primed the role of local governments and citizens to act on behalf of their interest negotiating space on their systems and economic and capital equipment support for PEG channels, in the Clinton-Gore era communities were exhorted to collaborate with private businesses to developed public ICT programs. However, in recent years, states like Texas have actually preempted municipal action for the provision of telecom services for the public, diminishing regulatory protection for PEG channel operation. Furthermore, the state picks and designates "legitimate" access providers. In the early 1990s, libraries, community centers and networks, and not cable access channels, were

singled out as community partners of the government and private businesses to build the National Information Infrastructure.

This study also found that agents with more symbolic and social capital acted as central nodes weaving connections and formulating symbolic frames for the action of other agents and organizations in the field. The multi-positionality of certain informants as city officers, members of access and technology groups, business executives and cyber-activists contributed to the configuration of a sense of field identity based on sector specialization and social recognition within the Austin community, and by the local powers. In doing their work, these individuals highlighted the contributions of access initiatives for the City and industry's economic development efforts, and how the public ICT access could build social cohesion and bridge the historical divides of the city, now reproduced by the growing disparities between the members of the tech economy and the poor.

But fields also operate as sites of struggles and social divisions. This study identified the existence and operation of different access cultures as a centrifugal force in the field of ICT access promoting its division. Cultures of access can be best identified by distinct normative visions of access and their professional practice. In the first realm, for instance, conceptualization of access as "expression" rather that "information" divided understandings and prevented cooperation between ACTV members and librarians that created MAIN when they first organized as an access group in 1994. Likewise, the conceptualization of access as "basic computer skills" for social service applications, rather than "innovation" for commercial and open applications provoked a division between AFN and members of wireless access groups. As previously discussed, such divisions contributed to the fragmentation of the field. The sense of professional practice was an equally important factor shaping access cultures and fields. The cable access

culture gravitated toward video-production and training opportunities for the public while tech-oriented groups such as the wireless non-profit placed emphasis on enabling connectivity and building networks.

This research proposed that the concept of institutional embeddedness could be used to identify the way in which non-profit action of access organizations intersects with both for-profit actions and public enterprises, and further shapes the field. Under the strong sponsorship of the local government and partnerships with non-profits and providers of basic social services, Austin Free-Net's activities cut across activities of many public service programs such as workforce development and adult education, immigration and naturalization services, health care assistance and other state services that – as one of the informants remarked – have moved operations online. Industry sponsorships and partnerships for service provision such as the ones crafted by community wireless groups bore witness to the economic externalities that non-profit action in communication infrastructure can generate.

2. RECONFIGURING ACCESS FOR THE POST-CONVERGENCE ERA

Much of the question about the contribution and function of public access initiatives in the digital age have been framed by long-standing debates between civil libertarian principles and communitarian ideals surrounding the development of new technologies. As Rennie (2006) notes, this has also been the source of on-going arguments about the value of community media and policy that support them, limiting our understanding of the significance of grassroots media for our societies. I would like to extend this reflection to current discussions about the role of community technology and community informatics in enabling people's access to new technologies, and suggest that we need to move beyond techno-centric frames and reassert the value of initiatives

that foster public access to information and communication services across all media platforms. The challenge is to devise a framework that supports convergence from below.

Civil libertarian frameworks on access issues emphasize the preeminence of individual rights and personal freedoms over any kind of group authority (government, corporations or community groups). They foster a vision of the technology as enabler of individual action and individual choice, and a vehicle for the expansion of individual freedoms. This perspective assumes public ICT access as a substitute for individual access which is defined as home access and most recently as mobile broadband access. Thus, public Internet access initiatives function as a temporary solution for the "have-nots" that provide them with a "jump-start" to enter the digital world, getting ahead in the digital economy, and enjoying the freedoms supported by virtual worlds. Under this perspective, advocacy and mobilization to support access rights of the public have mostly referred to the protection of individuals' digital rights such the electronic freedom of information, privacy, and the freedom to connect. In the case of Austin, technology enthusiasts first affiliated to Austin Free-Net, the Electronic Frontier Foundation and wireless user groups are examples of how the civil libertarian ethos have manifested in the field of public Internet access. As I noted, electronic freedom of information was an important frame attracting support for AFN. Most recently, wireless groups have rebutted state and legislative attempts to override common-carriage regulation on broadband networks, calling for defense of the "freedom to connect."[200]

Proponents of communitarian interpretations of access, on the other hand, reassert the preeminence of the social over the individual. The communitarian perspective of new technologies assumes that digital networks can reinvigorate the social fabric of community life by activating social networks, and bringing economic prosperity and

[200]EFF Austin New. Report that HB 789 Has Died. May 29.2005
http://www.effaustin.org/2005_05_01_effa_arc.html

better quality of life to communities that adopt ICT. Community networks and other public networked environments such as public libraries are assumed to manifest social cohesion and shared community values. The communitarian framework has left little room to question issues of uneven power dynamics, participation and social representation of the public within organizations that promote public Internet access. Acting on behalf of the populations they serve, the communitarian approach to public Internet access promotes social applications of the technology that are regarded as more acceptable and beneficial for the larger community. One of the problems with this perspective, as I illustrated in the case of Austin, is that ICT access organizations have little direct participation from the populations served, and tend to be directed by groups invested in promoting particular understandings of technological artifacts, their social applications and relationship with the new economy.

Both the civil libertarian perspective and the communitarian approach to access pose challenges for policy and regulation in support of the public's right to access and participation in new media networks. Civil libertarians welcome government action only when it supports private initiatives and individual rights, in the context of free, competitive markets and competition. Through the analysis of a market-led approach to access as illustrated by the case of public wireless access in Austin, I found that non-profit, community action can succeed in shaping the market while failing to address larger issues of social inclusion. Meanwhile, communitarians subscribe to different degrees of anti-statism against regulation that is not aligned with group agendas, invoking traditional solidarities and communal values. As the case of Austin Free-Net showed, the agenda of access initiatives was very vulnerable to changes in funding sources and institutional partnerships through which the organization tried to build its sustainability.

As Cohen and Arato point out (1992), libertarian and communitarian perspectives can fall into the trap of old dichotomies that oppose civil society to state action, ignoring the spaces in which civil associations and groups encounter governmental initiatives that foster conditions for their development. Civil society cannot be reduced to the pluralistic model that sees society as myriad social groups guided by the consensual vision of representative democracy. Likewise, a fragmented public access landscape formed through a gamut of initiatives that do not talk to each other cannot be interpreted as a widely democratic and participatory media landscape. Neither should civil society be understood as a private enterprise evacuated from social and political goals, just as flourishing public wireless opportunities in Austin bypass low-income areas of town. As argued by Cohen and Arato, issues of participation and representation are key to redefining more inclusive frameworks of governance. Can new media networks provide a space for that?

Many analysts have seen the arrival of a truly participatory culture in an emerging digital commons forged through two trends in media convergence: 1) the spread of miniaturized and mobile appliances that supports access to diverse types of content; and 2) the latest wave of social software and online applications such as blogs and wikis that enable collaborative work and new forms of social production (Benkler, 2006). According to Jenkins (2006), this blooming convergence culture is generating newly "empowered consumers" able to remix the latest episode of their favorite show to express their interpretations and feelings toward popular fiction (p.23). In doing so, the empowered consumer will challenge the rationale of the media market which is based in segmentation and control of its audiences. In Austin, proponents of public Wi-Fi mobilize to empower customers of commercial venues through open broadband networks. It is true that much learning about innovation and participatory dynamics can occur in the informal

settings of this convergence culture. But as the Austin example indicates, questions remain as to how virtual commons will deal with the politics of participation and social stratification in real space. Can access organizations become forums that promote a more participatory culture able to bring the wealth of virtual networks to real space?

Rennie (2006) has suggested that we should start by rethinking the whole notion of the public interest traditionally defined as people's "access to" resources that are owned or controlled by private media or the state. This perspective, she argues, reduces public and community media to a subservient component of a system where communication rights are defined by property rights. The answer, Rennie asserts, is to conceive access as "openness and intercreativity" rather than a public service or as an individual's claim to a right for personal fulfillment. Following Rennie's reflections on a commons approach to grassroots media, public ICT access can be regarded as a community resource and as an enabler of a civil society in which citizens should find support for realizing the potential of the multiplicity of applications facilitated by the technology. If this is the case then public ICT access as an innovation hub should not be understood as a simple "diffuser" of new applications but as a co-creator of social applications of the technology. The existence of public access should not be made contingent on universal penetration of the latest innovation. Its role goes beyond that, serving as a social mechanism for the redistribution of the wealth of networks, and the point of departure for experimentation and innovation. The commons is not just a simple public good, it is a system of open participation that can harness the benefits of public-private partnership under different modalities and forms. The limits of the commons are indeed the social relations that enable them. Therefore, in pursuing their work, public access organizations should renew their commitment to issues of representation and

direct participation of users. Government support will be also needed to provide operational sustainability, allowing for long-term planning efforts.

2.1. Policy implications

If the local government is to be commended for its efforts in spearheading access initiatives, federal and state governments provided crucial support for the expansion of ICT access initiatives in Austin. Considering all the rhetoric about private initiative and entrepreneurialism that surrounds public ICT initiatives in Austin, a somewhat surprising finding of this study was that state and federal programs provided crucial investment for the expansion of public ICT access infrastructure in libraries and community sites. The evidence suggested that the field of access would greatly benefit from structural regulation that protects these public forums and keep them open to everyone. Notwithstanding the institutional disposition of the public library system, which operates in a top-down rather than participatory mode, the example of the public library offering extended access through wired and wireless connectivity, online information, assistance and some training programs stands out, illustrating the benefits provided by access institutions protected by FOIA and universal service mandates.

In the case of Austin, the municipal government has facilitated crucial support for operational costs, including picking up bills from broadband providers (i.e. SBC and Time Warner) for connectivity fees for Austin public libraries and AFN community sites. However, this indirect subsidy of commercial providers has absorbed money needed for program development, training, content and other activities necessary to expand access services beyond mere web connectivity. Once the federal and state programs were shut down, local support became critical for access organizations. The utilization of city infrastructure through the GAATN fiber network to support operations of access groups could be a more efficient way to address issues of the sustainability of these institutions,

while liberating funds urgently needed to develop their programs to include a wider variety of digital media literacy skills.

The City has also made great contributions to the field of public access through several programs that fund connectivity, training and innovation though a multiplicity of organizations. The impact of these laudable efforts and commitment to public access can be considerably enhanced through local policy aimed at leveraging resources, coordinating action and sharing best practices in the field. The City could advance such policy by offering incentives in programs such as the GTOPs, requiring access groups to develop collaboration. Another way to build the sustainability of access organizations would be to encourage them to develop a participatory approach in their practice and programs, as a means to foster deeper roots in their communities. The City could assist by funding a citywide assessment that would survey the access needs of Austinites to guide planning and operations of access groups.

The private sector has displayed a great deal of social activism through their support of libraries and by jump-starting access initiatives such as AFN and Austin Wireless City. It is important that the private sector continues this work, by broadening the range of options of its granting programs to include assistance to both innovative applications of the technology and sustainability of on-going, successful programs. However, the biggest challenge for the private sector remains the discursive framework on access that has limited much of its activity to market-oriented solutions that have distributed access unevenly across the city.

Perhaps the biggest challenge lies on the side of access groups. Access groups must urgently incorporate the user perspective into the design and performance of their programs. This study showed that ICT access programs were highly advocate-provider-driven, seldom consulting users or incorporating users into their volunteer base. In part,

the disparity between connectivity at public spaces in the west and the east of the city can be explained by the different approaches that Austin Wireless City Project and AFN have followed regarding incorporating users of their services to their volunteer bases. In the west, many Wi-Fi users joined AWCP to bring connectivity to the coffee place or bar nearby. In the east users were treated as passive clients and recipient of AFN services. Neither approach has fostered solutions that are both inclusive and participatory, despite the best efforts of both groups. Whether access cultures will develop in Austin in the future that foster a broader culture of access remains to be seen.

3. CONCLUSIONS AND FUTURE PROSPECTS

This project has focused on how shifting policy discourses of public access to new technology have impacted local efforts to deliver these services. Findings indicate that while support and direction from the federal and state government have fallen over time, redefining the public interest in individualistic and market-oriented terms, the local government has become the main force behind public ICT access initiatives in both normative and material terms. Private initiative has become more closely affiliated to established institutions such as libraries, or to entrepreneurial approaches to access such as the one developed by wireless user groups. The analysis identified divergent trajectories of ICT access programs leading to fragmentation rather than convergence of initiatives and visions. This evidence suggests that more guidance and support is needed from public policy that strengthens the role of institutions that facilitate people's use of technological innovations.

These results should not be interpreted to mean that initiatives to bridge the digital divide are not useful or beneficial. This study did not test how the different access models relate to program outcomes and user satisfaction. However, this study does show that the multiplicity of public access initiatives did not lead to collaboration or to a wealth of

resources being made available to all publics. The social stratification of access initiatives in Austin suggests that a blooming technology-driven economy does not easily translate into abundant technological resources for all. Public policy should assume a more active role in organizing resources and leveling the playing field of public access.

Future research could address the limitations of the current project by building comparisons with other cases, further examining historical factors shaping public access policy and practice, and studying the interactions between public access models and outcomes of these initiatives. Another important aspect to explore is the institutional and structural problems limiting or preventing more collaboration between technology groups and community media organizations, as these represent the basis for building wider support for public access in the area of technological convergence.

Findings of the Austin case study could serve as a basis for comparison with other cases, in particular with the case of technology-oriented cities such as Boston, Portland and Seattle that exhibit strong public access trajectories. The hypothesis of the social stratification of access needs to be tested in different social contexts to account for changes in key variables identified by this study such as the role of local and state policy, institutional dispositions and embeddedness or partnerships of access organizations. Although the longitudinal analysis of trends sought to build a historical perspective into the analysis, greater historical contextualization could shine light on factors that acted as shapers of policy discourses, looking at how the different definitions of public participation in new media emerged through negotiation and struggle among different stakeholders. For example, discourses about public safety applications and how public access is called on to support "strategic government efforts" have emerged in the post September 11 2001 United States.

An almost unexplored aspect of the literature is the social construction of public access among immigrant populations. Although, in recent years the country has experienced the largest waves of immigration in its history, the issue of access and immigrant groups remains a very marginal topic in the literature on information technology in the United States. Comparing U.S. cases to international cases could contribute to the study of cultural factors as well as different trajectories in federal level policy.

A critical aspect to explore is how different access cultures meet the demands of the general public and particular constituencies with special needs. More program evaluations and user-centered assessments of public access programs are needed, tying connections between institutional context and practice, structure of services and programs, and outcomes. This assessment should make a particular effort to examine how users' voices can be heard in access programs that operate under a top-down approach. Participatory evaluations can facilitate the dialog, facilitating the process by which communities can better appropriate ICT access resources.

Finally, this project has focused on the practices of public access organizations, understanding them in terms of fields and access cultures. An important area of inquiry proceeding from this would be to study how access groups develop their role of cultural intermediary between online and off-line communities. Just as Austin public libraries have devised computer terminals for immigrants that use the technology as a mechanism of cultural adaptation, other access organizations could open new windows and frame new dynamics between local communities and the global. Findings of the Austin case lend support to theoretical propositions and observations by Saskia Sassen and other theorists of globalization who argue that social dynamics of localities have great impact on how global digital networks are structured. Serving as an interface between the global

and the local, access cultures have the potential power to redirect information flows inward or out from the communities they serve.

Appendix I

Interview Protocols

Interview Guide: Public access providers

Interviewee_____
Organization/Agency: _____
Position/Title: _____
Date_____ Time_____ Location_____
Interviewer_____
Interview Site: _____Case #:_____
Has the consent form been signed? _____
Other Comments:

Section 1.- Background info

1. Can you please tell us a little of your personal history, and when and how did you get involved in the efforts to provide Public Access in Austin in the first place?
2. Who else was involved in these early efforts? Can you remember names or groups working on this issue? How did you get connected to them?

Section 2.- Public Access Sites

1. Plans for access site.
   a. What was the initial plan for your access site?
   b. What is the current long-term plan for your access site?
2. What did you think people would do with this access?
3. Use of Access
   a. Was there anything you encouraged people to use this access for?
   b. Is there anything you are now encouraging them to do with access?
4. What are users doing at the public access site?
5. Who are the main users at your site?
6. Are there any groups that you have trouble reaching?

Section 3.- Process

1. Who initially proposed adding Internet access to the center?
2. Who initially proposed adding training to the center?
3. Why was this center proposed for this particular community?
4. Was community input sought during the early planning phases of the center (i.e., from non-profit organizations, individuals, government, businesses, etc)? lf so, how? (e.g., adding access, adding training)
5. How were community needs assessed by developers of the center?
6. Were targeted groups involved in the initial planning phase of the project? lf yes, how?
7. Have you done an evaluation for your site? If so, can you share with me the results?

8. Has the center adapted as a result of this evaluation?
9. What strategies did you use to inform the community about the center?
   a. About Internet access?
   b. About computer training?

10. Are you concerned about sustainability for your site? If so, where do you anticipate future funding coming from?

Section 4.- Training

1. What courses are provided and how often are they provided?
2. lf training is provided, can you provide me with information about participation
3. (e.g., attendance, demographics of attendees, and procedures for gathering
4. feedback)?
5. Do you provide services specifically for businesses? lf so, what are they?
6. Do you provide job training? If so, what kind?
7. Center offers some very simple help with resumee preparation, but no other kind of training.
8. How do you choose your instructors? Do you have any criteria for
9. selecting your instructors?

Section 5.- Civic Participation in Community Network Project

1. Did you collaborate with any other community groups in developing you site?
2. Does your center have a Web site?
3. Do you have links on your Web site to community resources, such as:
   __ government offices
   __ local schools or school districts
   __ civic groups or organizations
   __ social clubs
   __ other (specify)
4. Does the center provide information on community programs and events?
   a. How?
   b. Where?
5. Are people using access to get social service information? What type? (govt, nonprofit)
6. Has the center had any role in a neighborhood issue, event or controversy? lf so, please explain.
7. With which other local organization(s) is the center working with to
   a. provide access?
   b. train or educate people about computers/Internet?
   c. other types of training or education?
   d. getting people involved in local issues?
   e. provide social services?
8. What are the main community organizations in the area near the center?
9. Are those organizations making use of the center? In what ways?

Public access site checklist (to do after in-depth interviews are asked)

Location:_____
_____
Hours of
operation:_____
Staff on
site_____
Technical Support:_____
Information/assistance._____
Number of terminals: _____ _____
Do you mind sharing with me who funded your equipment?
Type of computers:
_____ _____
Speed of connectivity & Provider:
_____Sof
tware used at site (educational, training, etc):
_____
Number of printers: _____
Number of scanners: _____
Number/type of other peripherals:_____
Laptop checkout? Yes [] No []
lf yes, number of laptops available: _____
Checkout policy:
_____Is
this public access point physically accessible to the disabled? Yes [] No []

Have efforts been made to incorporate assistive technologies into the center? lf so, what were they? Yes [] No []
lf yes, describe: _____

Acceptable use policy? Yes [ ] No [ ]
lf yes, describe:
_____Filt
ering policy or software? Yes [] No [ ]
lf yes, describe: _____
Rules on Downloads of MP3s or video files, game-playing?

Do you have open access for personal use (such as email, chat, etc.)? If so, what are those hours?_____
Other comments/observations:
_____

Questionnaire for stakeholders (Cultural mapping project)

Case #_____

Interviewee_____
Organization: _____
Title: _____
Contact info:_____
Date_____ Time_____ Location_____
Interviewer_____

Intro questions

1. Please briefly describe when and how you got involved in this organization

2. What are the main activities taking place currently at your site?

3. Can you explain what value you see in public access to computers and the Internet in general terms?

The organization and Public computer access services

4. How and why your organization became involved in public Internet access? How did you design your public access program? Did you follow the example of another program here in Austin or some place else?

5. Describe the role that your public computer access site plays in this community, both for your immediate neighborhood and for any larger target community you serve?

6. Who are the primary vendors and supporters of your public computer access services? (including volunteers, donors, Internet service providers, training and curriculum etc)

7. What are some of the challenges you face providing public Internet access?
    a. Technological
    b. Financial
    c. Political
    d. Cultural (e.g., people's attitudes toward technology)

8. Is your lab being used at its full capacity? If not, why do people not use the computer access sites more frequently?

Users of public computer access

9. Please characterize the primary users of your public computer services?

10. Why do you think people come to this public computing access site?
    e. To access and use computers
    f. To learn how to use them and get help they can't have at home
    g. Communicate with other online
    h. Communicate with other offline
    i. Get information online

11. What other users' needs does this center fulfill?

12. What local issues if any are your users concerned about?

13. Where do you think your users get information about these issues both online and offline?

14. Do users ask staff to recommend websites on these issues? If so, what are some of these recommended sites and why?

Offline and Offline Habits of the organization

15. What local issues if any is your staff concerned about?

16. Where do you think your staff gets information about these issues both online and offline?

17. How does your organization get information to the public? What media do you use most? Would you like to use any other medium?

18. How do you network with other community groups?

19. Is your organization interested in providing users with more information about this neighborhood?

Plans/Vision

20. Please describe the organization's main projects for the upcoming next two years.

21. What online services do you want to provide to users in addition to access?

Questionnaire for stakeholders (Wi-Fi Project)

Interviewee_____

Organization: __ _____

Title: _____

Date_____ Time_____ Location_____

Interviewer_____ _____

Background info

1. Can you please tell us a little of your personal history, and when and how did you get involved in the efforts to provide Public WiFi in Austin in the first place?

2. Who else was involved in these early efforts? Can you remember names or groups working on this issue? How did you get connected to them?

Perceptions about wireless and Austin

3. Can you explain what value you see in the use of broadband wireless communications over other technologies?

4. Do you think that Austin is a good place for this kind of initiative? Why yes or no? What kinds of resources are available in Austin that may not be available in other places?

Organization and Public WiFi

5. How did the idea of Public Wi-Fi deployment come about to you, and your organization? Did it follow any model practiced in other places?

6. Please name the initiatives that your organization is pursuing for Public WiFi connectivity. Please name the different kinds of applications being pursued

7. Who are the primary users/customers? Who are the primary suppliers?

8. What are some of the challenges you recognize for the plans of your organization in regard with the deployment of public WiFi? (Technologic, Financial, Political and Cultural challenges – e.g., people's attitudes toward wi-fi)

9. How would you describe your organization's vision for WiFi development so far?

10. Do you envision cultivating more hotspots in East Austin, where currently there are very few hotspots? How?

Social networks and relationship with other groups

11. Please describe the relationship between your organization and:

a. AWA b. AWG/ AWCP c. Less Networks d. IC2 e. Austin Free Net

d. Could you please mention other groups that are key to the development of Public WiFi in Austin? (Libraries, etc)

Survey of Wi-Fi Venues (Wi-Fi Project)

Section I. Public WiFi access site

Planning

1. When did you start providing Wireless Broadband Internet access to the public? Please write the approximate date.

2. What was/were your main reason(s) to provide Wireless Internet in the first place?

(Most important reason) 1._____
2._____
3._____
4._____
(Less important reason) 5._____

3. Who initially proposed to install public Wireless Internet in your establishment?
_____ My WiFi provider (*Please go to 4*)
_____ My phone company (*Please go to 4*)
_____ My cable company (*Please go to 4*)
_____ The Austin Wireless City Project/ Less Networks (*Please go to 4*)
_____ Customers or regulars (*Please go to 4*)
_____ Self-started, I sought out the service (***Please go to a***)
_____ Other / Please name (*Please go to 4)*: _____
_____

a. If you actively sought out Wireless Internet to make the service available to the public, how did you get the idea to do it?
___ My own experience, I have used WiFi before
___ From other public spaces and venues that offer the service in the city
___ From the media, in the form of news or advertising
___ A friend recommended it
___ A co-worker recommended it
___ Other / Please specify:
_____

Implementation

4. Do you collaborate with any other community groups in developing Wireless Internet services in your establishment? ___ Yes (*go to a*)
___ No (*go to 5*)
___ Don't know (*go to 5*)

a. IF YES, with which other organization(s) are you working with to provide access?
_____

… to get more people to come to your venue? _____

… to educate people about computers/Internet?_____

… to provide other types of training or education?_____

… to get people involved in local issues?_____

… to provide social services?_____

5. Do you promote or advertise your Wireless Internet services?
___ Yes (*go to a*)
___ No (*go to 6*)
___ Don't know (*go to 6*)

a. IF YES, what strategies do you use to inform the community about your Wireless Internet service?
___ signs on site
___ flyers in the neighborhood
___ ads on the local media
___ online marketing (via email or other)
___ word of mouth
___ Other / Please name _____

6. Do you mind sharing with us how much the initial investment was to set up the Wireless Internet network in your establishment? If you have more than one venue, please mention the average cost per venue) $_____

7. Do you pay for your broadband connection?
___ Yes / Please specify the monthly cost: $_____
___ No
___ Don't know

8. Do you pay for the Wireless service of your broadband connection?
___ Yes / Please specify the monthly cost: $_____
___ No
___ Don't know

9. Do you have any other recurring costs for the Wireless connection?
___ Yes / Please specify the monthly cost, and who you are paying: $_____, paid to _____
___ No
___ Don't know

10. Do you think your establishment will continue offering the Wireless Internet service in the next few years?

___Yes
___No

Why?

_____

Section II The WiFi experience

About Austin and WiFi technology

11. Please indicate your opinion concerning the following statements as applied to the City of Austin

Statement	(1) Strongly Agree	(2) Agree	(3) Neutral	(4) Disagree	(5) Strongly Disagree
a. The economy here is better than in other places of the country					
b. This is a city that welcomes innovation and creativity					
c. Technology is important for the economic development of the city					
d. The local economy is doing well					
e. Your business/organization is benefiting from the city's technology businesses					

12. What is your general opinion about public wireless Internet?

Statement	(1) Strongly Agree	(2) Agree	(3) Neutral	(4) Disagree	(5) Strongly Disagree
a. It's a service that only wealthy people use					
b. It's a technology that can be useful for everybody in the city					
c. It's a service that people expect you to provide					
d. It's just a hype created by computer businesses					
e. It's the new Internet and I must have it!					

13. What is your general perception about how public wireless Internet affects or can affect your business or organization?

Statement	(1) Strongly Agree	(2) Agree	(3) Neutral	(4) Disagree	(5) Strongly Disagree
a. WiFi attracts more people to this venue					
b. People tend to stay longer if I offer WiFi					
c. This venue became too crowded because of WiFi					
d. WiFi is a positive feature for my business					
e. WiFi has little effect on my business or job					
f. My revenues have increased because of WiFi					
g. WiFi is an expensive service to offer					

WiFi users in public spaces

14. Who do you think are the main wireless users at your site? Please characterize them.

15. What did you think people would do with this access?

16. Do you use wireless Internet in your daily routines and business? Can you tell us how?

Infrastructure and Services Check List - Hotspots

17. How many public WiFi networks are available in the venue? _____

18. What type of public WiFi access does the venue provide to the public?
___ FREE for users and DOES NOT require user login
___ FREE for users but DOES require user login
___ Users must pay WiFi provider
___ Users must pay their network provider (ex: cell phone company)
___ Other/ Please name _____

20. Who is/are your WiFi provider(s)? _____
_____

21. Who is your broadband provider? _____

22. What type of broadband connection do you use? ___ DSL
___ Cable
___ T1 line
___ Satellite
___ Wireless

23. Who is responsible for administering and maintaining your WiFi network?
___ WiFi provider
___ Broadband company
___ Self-maintained
___ Other/ Please name: _____
___ Nobody is responsible
___ Don't know

24. What is the default homepage of the public wireless Internet connection? (The first page your wireless users automatically see when they connect to your network.)
___ Business or institutional home page
___ Broadband provider's web site
___ WiFi provider's web site
___ Hybrid (venue branded)
___ No specific homepage
___ Others / Please name _____
___ Don't know

25. Does this Web site offer any of the following services?

___ Email
___ Chat
___ Music downloads
___ Games
___ Web hosting
___ Search engines
___ VOIP
___ Others/ Please name: _____
___ Venue branding
___ National press
___ Video

26. Does this Web site have links to information such as…?

___ government offices ___ local schools
___ local groups or organizations ___ local entertainment venues
___ local press
___ Others/ Please name: _____
_____

27. Does your wireless Internet service have any acceptable use policy?

____ Yes ____ No ____ Don't Know

lF YES, please describe:_____
_____
_____

28. Does your wireless Internet service have a filtering policy or software?

____ Yes ____ No ____ Don't Know

lF YES, please describe:_____
_____
_____

29. Any rules on downloads of MP3s or video files, game-playing? _____
_____
_____

30. Do you have on-site computers available to the public? ___ Yes

___ No
___ Don't know

IF YES, number of terminals ____

31. Types of computers _____ Desktops _____ Laptops

32. How often are the terminals used by the public?

___ All the time
___ 80% of the time
___ 50% of the time
___ 20% of the time
___ Never

33. Do you offer information/assistance about how to use them? ___ Yes

___ No
___ Don't know

34. Do you mind sharing with us who funded your equipment?
_____
_____

35. Do you have computer terminals for you customers in your establishment?
____ Yes ____ No
lF YES, please describe the software used in thesecomputers: _____
_____

36. Number/type of peripherals (printer/scanner/cd burner)
_____
_____

37. Is this public Internet access point physically accessible to the disabled?
___ Yes ___ No

38. Have efforts been made to incorporate assistive technologies? lf so, what were they?
____ Yes ____ No

IF YES, describe: _____
_____
_____

Other comments/observations:

Social Network Questionnaire

Emerging models of public Wi-Fi access; Physical and social networks in the city of Austin

Social Network Analysis Questionnaire

This questionnaire investigates the social networks that exist among the various organizations that have a stake in development of public wireless Internet in Austin. The questionnaire has two main parts (A and B) and a total of 15 questions. Part A addresses the characteristics of your organization while part B investigates the relationships your organization has with other participants in deployment of Wi-Fi in the city. The questions for part B are contained in tables 1.0 and 2.0 where the various participants in Wi-Fi initiatives are listed. Please answer all questions from the perspective of your organization.

The Research Associate would like to assure you that the survey is purely for academic purposes and as such only the information you give, and not your particulars, will appear in the report. If you have any questions or doubts regarding this survey, please do not hesitate to contact Professor Sharon Strover at:
Tel. (512) 471-4191, e-mail: sstrover@mail.utexas.edu. This Research Project is supported by the Telecommunication and Information Policy Institute (TIPI) of the University of Texas at Austin.

Thank you!

Part A: Organization Characteristics

1) What is the name of your organization? _____

_____

2) How do you classify your organization? [Please check √]

a) Local Government Department ☐
b) Private Company ☐
c) Voluntary Sector Organization ☐
d) Non Profit Organization ☐
e) Educational Institution ☐
f) Research Institution ☐
g) Local community organization ☐
h) Other ☐ Please state _____

_____

3) What position do you hold in this organization? _____

4) What does your organization do? _____

_____

_____

5) What influenced your organization's interest in Public Wireless Internet?

_____

_____

_____

_____

6) List other organizations in which you participate that are actively engaged in initiatives that advocate for, support or make available Wireless Internet in public spaces in Austin. Please specify your position or title in them, if any.

_____

_____

_____

_____

7) What specific projects has your organization undertaken for advancing public Wireless connectivity in Austin?

_____

_____

_____

_____

Part B: Relational Information

Table 1.0 Participants in Austin Wi-Fi Landscape

Question 9 Which organizations do you communicate with in matters that affect Wi-Fi in Austin? Please check (√) in the boxes on the left and answer questions 11 to 14 for each of the selected organizations.		**Question 11** What is the frequency of communication with the organization? [Please check √]			**Question 12** Which statement best describes your relationship with the organization? [Please check √]				**Question 13** How important do you consider this organization for the deployment of Public Wi-Fi in Austin? [Check √]				
		Weekly or more frequently	Every other week	Monthly or other	We provide/ receive funds	Technical cooperation	Visions and strategic cooperation	Volun. coop.	1 Very Important	2 Important	3 Somewhat important	4 Not very import.	5 Not Import.
☐	Austin Wireless Group	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	Austin Wireless City Project	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	Austin Wireless Alliance	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	Chamber of Commerce	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	Austin Free Net	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	City of Austin	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	State of Texas	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	The Wi-Fi Alliance	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	IC2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	UT WNCG	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	Wayport	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	SBC	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	Road Runner	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Table 1.0 Participants in Austin Wi-Fi Landscape

Question 9 Which organizations do you communicate with in matters that affect Wi-Fi in Austin? Please check (√) in the boxes on the left and answer questions 11 to 14 for each of the selected organizations.		**Question 11** What is the frequency of communication with the organization? [Please check √]			**Question 12** Which statement best describes your relationship with the organization? [Please check √]				**Question 13** How important do you consider this organization for the deployment of Public Wi-Fi in Austin? [Check √]				
		Weekly or more frequently	Every other week	Monthly or other	We provide/ receive funds	Technical cooperation	Visions and strategic cooperation	Volunteer cooperation	1 Very Import.	2 Important	3 Somewhat important	4 Not very import.	5 Not Import.
☐	Grande Comm.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	Austin Unleash	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	Wi-Fi Texas	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	Tengo Internet	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

14) Out of the following list, please check the names of those individuals and organizations you know that are actively involved in supporting, developing or advocating of public Wi-Fi in the city of Austin.

_____	Boyd, Chris	AWC, Midas Networks
_____	Butler, Jim	City of Austin
_____	Chatterjee, Arun	AWC, LessNetworks
_____	Collins, Pete	City of Austin
_____	Defosse, Erin	AWA/ Austin Technology Incubator – IC2
_____	Evans, Eliza	IC2
_____	Garner, Laura	TW- Road Runner
_____	Hawkins, Rondella	City of Austin
_____	Lebkowsky, Jon	IC2/ AFN
_____	Mackinnon, Richard	AWC, LessNetworks
_____	Rappaport, Ted	UT WNCG
_____	Vogher, Dan	AWC
_____	Woodgate, Derek	IC2

15) Please list the names of other people and their organization who are actively engaged in supporting, developing or advocating of public Wi-Fi in the city of Austin

Appendix II

Austin Free-Net Freedom of Information Policy

Austin Free-Net (AFN) is a community-driven organization that provides and facilitates access to information. The AFN does not decide what information people can and cannot access. These decisions are made by the people who are responsible for the locations in which Austin Free-Net equipment and telecommunications services are located.

If these people or organizations decide to filter information, we will assist them in selecting and implementing a filtering software product which meets their needs. Austin Free-Net funds will not, however, be expended for filtering software. We also provide guidance for parents, educators, and others in the issues surrounding information on the Internet.

Appendix III

Austin Universal Access Model

Universal Access. We believe that universal access will require: an infrastructure of accessible hardware and software; content that is meaningful, useful, and engaging for a wide variety of users; and a process of learning how to use the technology that is dynamic and engages learners in teaching their skills to others.

Choice and Control. Users must have maximal choice in the form and type of content available to them, as well as the technological platform they use to access that content.

Open Networks. All users should be able to both originate and receive content on the same basis. And the principle of free expression must be preserved.

Human Development. Universal access to information technology has the potential to enhance the human development of individuals in low-income communities. It can increase educational and employment opportunities; provide new avenues for artistic expression; stimulate interaction across geographical and social boundaries…

Community Development. Universal access can also improve the quality of community life and community relationships by improving the economic climate of depressed neighborhoods; facilitate broader and higher-quality participation in political debate; and forge stronger ties between neighborhoods and localities that are divided by geography, socioeconomic status, or culture. Public policies should seek to realize this potential.

Bytes for Low-Income Communities: LBJ Policy Research Project 1995-96

Appendix IV

Austin Free-Net Sites

Site Name	Type of Org	Address	YEAR Opened	YEAR off network
1. Faulk/Central	Library	800 Guadalupe St	1996	2005
2. Austin History Center	Library	810 Guadalupe St	1996	2005
3. Carver	Library	1161 Angelina St	1996	2005
4. Cepeda	Library	651 N Pleasant Valley Rd	1996	2005
5. Hampton at Oak Hill	Library	5125 Convict Hill Rd	1996	2005
6. Howson	Library	2500 Exposition Blvd	1996	2005
7. Little Walnut Creek	Library	835 W. Runberg Lane	1996	2005
8. Manchaca	Library	5500 Manchaca Rd	1996	2005
9. Milwood	Library	12500 Amherst Drive	1996	2005
10. North Village	Library	2139 W Anderson Lane	1996	2005
11. Oak Springs	Library	3101 Oak Springs Drive	1996	2005
12. Old Quarry	Library	7051 Village Center Dr.	1996	2005
13. Pleasant Hill	Library	211 William Cannon Dr.	1996	2005
14. Riverside	Library	2410 E Riverside Drive	1996	2005
15. St John	Library	7500 Blessing Ave	1996	2005
16. Southeast	Library	5803 Nuckols Crossing Rd	1996	2005
Spicewood	Library	8637 Spicewood SpringsRd	1996	2005
Terrazas	Library	1105 E Cesar Chavez St	1996	2005
Twin Oaks	Library	2301 S. Congress Ave	1996	2005
University Hill	Library	4721 Loyola Lane	1996	2005
Windsor Park	Library	5833 Westminster Drive	1996	2005
Yarborough	Library	2200 Hancock Drive	1996	2005
Montopolis Center	Comm Center	1416 Montopolis Dr	1997	2004
Sweet Home Bapt Church	Church	1725 West 11th St	1997	2003
Our Lady Center	Church	1817 E 6th St	1997	2003
B-I-G	Non-profit	1050 East 11th St	1997	2003
Meadowbrook Apart.	Apartments	1201 W Live Oak St	1997	2003
Texas Empower. Acad.	Educational	1210 Rosewood Ave	1997	2003
New Lincoln Bapt. Church	Church	2215 E. 8th St.	1997	2003
Langford Elem	Educational	2206 Blue Meadow Dr	1997	2003
Palm Elem	Educational	7601 Dixie Dr	1997	2003
Houston elem	Educational	5409 Ponciana Dr	1997	2003
Widen Elem	Educational	5605 Nuckols Crossing Rd	1997	2003
DeWitty EACN Lab	AFN site	2209 Rosewood Ave	1997	active
East Austin Police Dpt.	Police	Rosewood Ave	1997	off network
Austin Learning Academy	Adult Ed	1201 Hackberry St	1998	2005
Austin Access Center	ACTV	1143 Northwestern Ave	1998	2003
East Side Story	Non-profit	2209 Rosewood Ave	1998	2003
Mount Carmel Apart.	Apartments	2504 New York Drive	1998	2003
Rio Lado Apart.	Apartments	2989 e 51st St	1998	2003

Site Name	Type of Org	Address	YEAR Opened	YEAR off network
Cornerstone Bapt Church	Church	15300 Dessau Road	1998	2003
Conley-Guerrero Senior Center	Senior Center	808 Nile St	1998	active
Grandma Camacho Center	Comm Center	34 Robert Martinez Jr. St	2000	2005
Lamar Senior Center	Senior Center	2874 Shoal Crest Ave	2000	2003
Treasure of the Hills Senior Center	Senior Center	408 Ridgewood Dr	2000	2003
Bedichek Middle School	Senior Center	6800 Bill Hughes Rd	2000	2003
Austin Comm. College	Educational	3401 Webberville Rd	2000	2003
COA University Hills Library	Library	4721 Loyola Lane	2000	2003
ATPN Portable LAB		2210 Rosewood Ave	2000	active
South Austin Senior Center	Senior Center	3911 Manchaca Rd	2001	2003
ARCH	Homeless shelter	500 E 7th Street	2002	active
Casa Marianela	Immigrant shelter	821 Gunter St	2002	active
Oak Creek Village Apartments	Apartments	2324 Wilson Street	2002	active
Lake Travis Comm. Lab	Compu. lab	3818 RR-620 North	2003	2003
St. Peter's United Met. Church	Church	4509 Springdale Rd	2003	2003
Garden Terrace	Apartments	1015 W. William Cannon Dr	2003	active
Resistencia Bookstore	Bookstore	1801 S 1st St	2003	active
Fishermen Ministries	Youth-faith org	2931 E 14th St	2004	2003
ALLGO	Gay&Lesbian org	701 Tillery St	2004	active
Huntington Meadows Apartments	Apartments	7000 Decker Lane	2004	active
Lyons Gardens Senior Housing	Senior housing	2720 Lyons Road	2004	active
East Side Community Connection	Social service	5810 Berkman Drive	2005	active
Literacy Austin	Adult Ed	2222 Rosewood Ave	2005	active
Rosewood Zaragoza Center	Health center	2800 Webberville Road	2006	active
Trinity Center	Faith org	304 E. 7th St	2006	active

Appendix V

Organizations involved in the deployment, promotion and advocacy of public Wi-Fi in Austin

Nonprofits	**5**
AUSTIN WIRELESS CITY PROJECT	
AUSTIN FREE-NET	
ELECTRONIC FRONTIER FOUNDATION	
CAPITAL AREA TRAINNING FOUNDATION	
DEWITTY JOB TRAINNING CENTER	
Users groups	**1**
AUSTIN WIRELESS GROUP	
Local government agencies	**3**
CITY OF AUSTIN- IT GROUP	
CITY OF AUSTIN- REGULATORY AFFAIRS	
CITY LIBRARIES	
Educational institutions	**4**
AUSTIN COMMUNITY COLLEGE	
HUSTON TILLOTSON COLL.	
AUSTIN INDEPENDENT SCHOOL DISTRICT	
UNIVERSITY OF TEXAS	
Research institutes	**3**
UT IC^2 INSTITUTE	
UT WIRELESS NETWORKING & COMMUNICATIONS GROUP	
UT LBJ SCHOOL	
Business associations	**3**
AUSTIN WIRELESS ALLIANCE	
CHAMBER OF COMMERCE	
WIRELESS ALLIANCE	
Commercial providers	**10**
SOUTHWESTERN BELL CO.	
GRANDE COMMUNICATIONS	
TIME WARNER/ ROAD RUNNER	
WAYPORT	
WIFI-TEXAS	
TENGO INTERNET	
AUSTIN UNLEASHED	
IMAGEMICRO	
WAVEFORW	
REALLINX	
Total	**29**

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VITA

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